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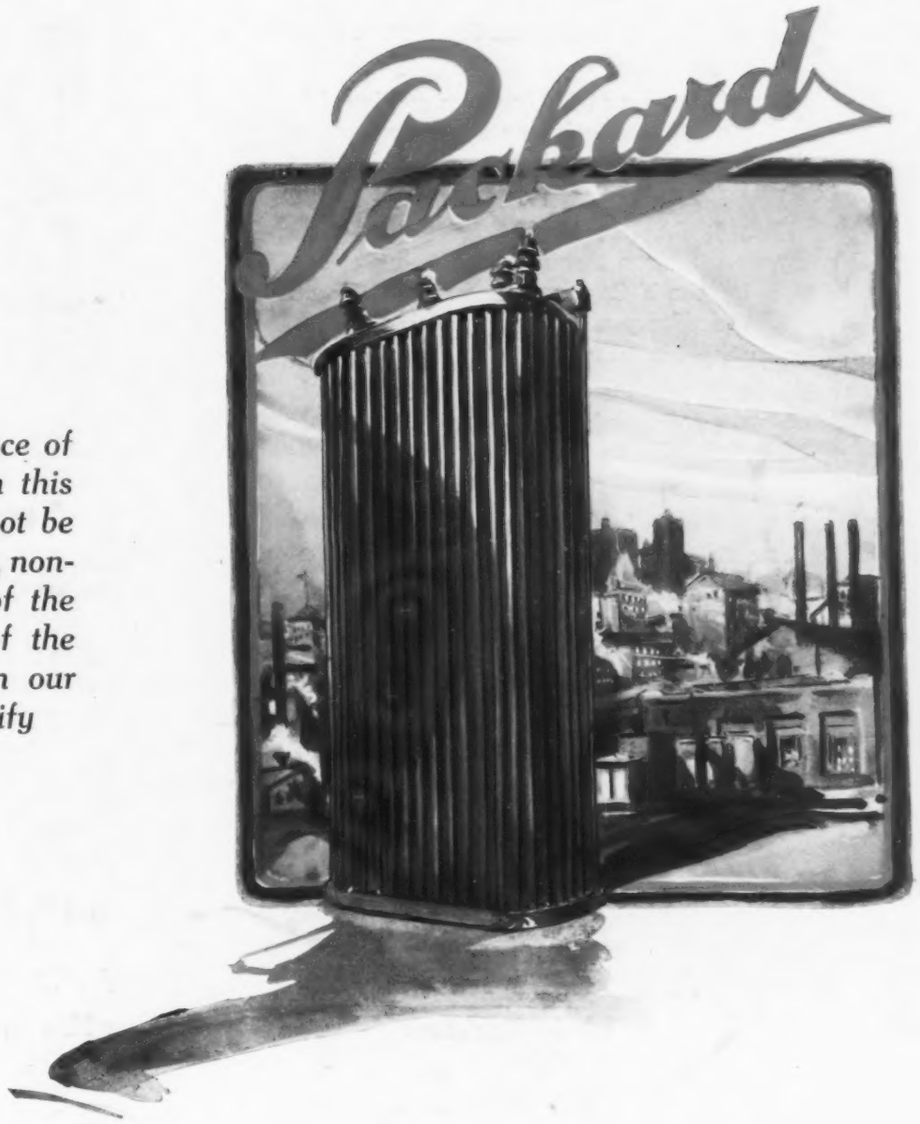

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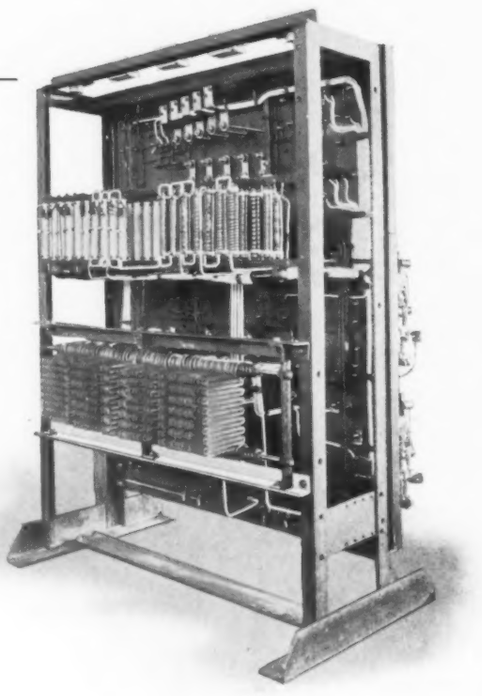

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An Analysis of the Channels of Distribution

FULLY half of the literature on business subjects written during the past few years has dealt with distribution. It has been the vital question at sales conferences and conventions. The consensus of opinion seems to be that something is wrong with the entire scheme of distribution and that steps must be taken for its remedy. Especially has this been true of the electrical industry. Prices are too high, and although the best thought in the industry has been devoted to the problem, no solution has been forthcoming.

Realizing the importance of the situation, the Journal of Electricity has undertaken a field study of conditions in the West, the results of which will be disclosed in a series of articles commencing with

the Fall Market Number, October 15, 1923. The study was made by a national authority on marketing and merchandising, Dr. E. A. Kincaid, associate professor of commerce, McIntire School of Commerce, University of Virginia. Until a year ago Professor Kincaid was a member of the faculty of the University of California, where for six years he offered courses on marketing and merchandising.

For the past two months he has interviewed many leaders in the electrical industry on the Pacific Coast relative to the question of distribution of electrical products of all kinds and the results of his studies cannot help but be of great interest to electrical manufacturer, central station, jobber and retailer. This is but one of the many special services which the Journal of Electricity is offering to its readers.

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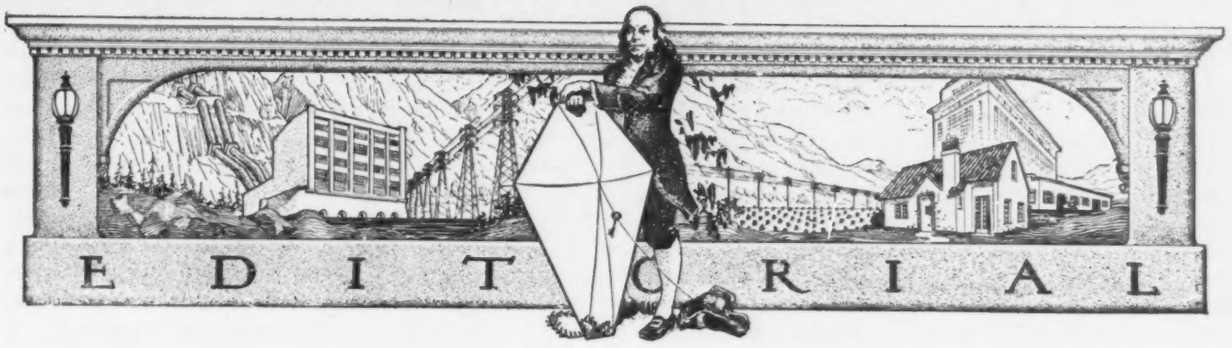


In Union There Is Strength

WEST of the Rocky Mountains great things are accomplished. Out here the kilowatts are a little "fatter," the prunes a little larger, the trees a little taller and the climate—words will not describe it. We acknowledge all these things; we make speeches about them. Whenever we travel to those more benighted and less enlightened sections of the country which know not the warmer handclasp and the brighter smile (according to the poem), we expect to be congratulated on our accomplishments and to be asked to tell about them for the benefit of others. And we are congratulated and we do make a speech and undoubtedly others do benefit. Witness the influx of money and people! And then along comes some nation-wide enterprise in which we as westerners are asked to cooperate and we withdraw, convinced that our problems are exclusive unto ourselves and that we need no assistance from the outside.

AS a matter of fact, quite a few of the world's inventions and one or two of the progressive ideas in management and executive control have been worked out in other quarters than on our coast. The eastern business man and the eastern electrical man—and by eastern, of course, we refer to the entire trans-Rocky population—are progressive individuals. In some respects they do even better than the western man. There are more of them, for one thing. While it may be a little more difficult for them to get things accomplished because of the time required to reach the entire field, once told the story, they know how to spend money effectively and achieve results. The West would gain fully as much as it has to give in ideas and enthusiasm through association with its eastern brethren.

NOR should it be overlooked that the West is not yet quite independent financially. Most of the industrial manufacturing activities on this coast are branches of eastern concerns—many of the power companies are associated with larger holding companies whose headquarters are elsewhere. Much of the expenditure for purposes of progress must receive its O.K. from officials in the head offices located in the East.

IT is important that the West keep itself sold to the rest of the country. It cannot afford to antagonize the Easterner by a constant refusal to play ball. The League of Nations idea does not appeal to all people—but there can be no legitimate objection to the League of the United States idea and the western section of the North American continent would do well to entangle itself in a few alliances with progress elsewhere than in its own little sphere.

Is Hetch Hetchy to Be Another Municipal Fiasco?

THE engineers in charge of San Francisco's Hetch Hetchy project have urged the serious consideration of the sale of power developed as a byproduct to one of the power companies. There is a very strong sentiment among the more substantial element of the business men in that community against the city's going into the retail power business. In fact, were it only clear that it was possible to do so, the power would probably be disposed of at the earliest possible moment to existing agencies at the power house and the city left free to devote its time to the development of its water system.

The irony of the situation is that there is a very grave question as to whether such a satisfactory solution to the question is legally permitted. It is certainly time to examine the situation frankly and to have its complications and absurdities understood.

For instance, it seems not to be generally known that under that extraordinary congressional document known as the Raker Act, under the provisions of which the entire development is made, San Francisco is expressly forbidden to sell its power wholesale to any but an irrigation district or a municipality and that these in turn are forbidden to resell to any individual or corporation contemplating resale. It is true that later on in the measure it is stated that all power not taken by the Modesto and Turlock districts or municipalities within their boundaries may be sold commercially, but there is no reason apparent to a layman why this should be supposed to nullify the former provision. It is clear that San Francisco may sell the power to the Turlock or Modesto districts or to any other irrigation district or municipality or it may retail its power somewhere between the power house and the coast, or it may bring the power to San Francisco and there distribute it retail. It may be possible to evade the wording of the Act by "appointing one of the power companies as a distributing agent." It does not appear that there is any other course open to San Francisco under the Raker Act, and this last possibility opens the danger of a law suit.

No one with the interest of San Francisco at heart would wish to see it go into the direct sale of power. The irrigation districts at the present time generate their own power and are not in the market for more. When it comes to retailing the power, the first and most obvious obstacle, of course, is the initial investment in the distribution system required and the burden of the complicated organization necessary to operate such a system—an organization which must in some measure overshadow the more important though simpler functions of the water system and which would constitute a grave political danger. The citizens of San Francisco have already three times voted not to raise the city bonding limit and are not likely to vote to make this enormous further investment.

A further deterrent to undertaking retail distribution of the power is the fact that the Modesto and Turlock districts or any municipality within their boundaries will have at all times a prior right to all power generated, excepting only such as may be required for municipal public purposes by the city of San Francisco. Interfering sale to private persons or corporations is specifically disallowed. Thus it appears that were San Francisco to put in a complete distribution system and acquire customers who must be served, it might still some day find itself at the will of the districts, entirely without power of its own generation to distribute over its lines.

The further restriction is made that no power can be sold at less than cost—rates to be fixed by the Secretary of the Interior. The Act goes on to state that the price fixed "shall include a fair proportion of the cost of conduit, lands, dams and water supply system." It has as yet been only roughly estimated what this cost may amount to, but it is safe to assume that if a fair allotment is made, rates on this basis will be high—too high to compare favorably with those now possible to San Francisco under service from private companies.

The fact that it is not probable that the water supply end of the project will function at all for many years and that because of the extraordinary provisions of the Raker Act it can never bring in the return it should, lays a further burden upon the power development which, under one interpretation, might be asked to carry the entire investment for an unknown time. Apparently the implication involved in that clause of the Raker Act which forbids the diversion of any water from the Tuolumne beyond the San Joaquin Valley until the waters "which it (San Francisco) now has or may hereafter acquire" have already been used, has not been appreciated. This relegates the Hetch Hetchy water system definitely to the role of an auxiliary. No one who has studied the situation can overlook the fact that the Spring Valley system must be purchased before the water is brought into San Francisco. Part of the construction has already been made with that in mind. Not only are the distributing pipes necessary, but the Raker Act (again!) has promised away so much of the water in the Tuolumne to the irrigation districts that in dry seasons San Francisco will actually not have enough to serve the needs of its population from Hetch Hetchy development and local sources will be called upon. It is apparent, then, that what will happen is that the present system will go on being used, and only at such future date as it becomes inadequate will San Francisco be permitted to bring in any water from its mountain sources—and then only such small quantity as will fill up the gap. The grandchildren of the present generation of taxpayers may conceivably be so numerous that they will be using a diluted form of Tuolumne water, but in the meantime, San Francisco's tremendous investment in Hetch Hetchy as a water supply development will be bringing in practically no return. Is it supposed that the sale of power can possibly bear the burden?

This does not complete the list of entanglements which a perusal of the Raker Act will disclose, but

it is enough to show in what a precarious position San Francisco now stands. Almost any attempt to conduct business in a logical and economical way will offer the basis for a law suit. It is all very well to say, as has been continuously implied by those in charge, that no one is going to bring such a suit—there is always someone who will desire to discredit a city administration for political reasons, or who stands to gain by the trouble, to bring up such questions.

Of course, San Francisco should never have accepted such conditions. They were in a strategic position in their ownership of the water rights and they could have afforded to have refused the provisions of the bill and to have returned home to bide a later day and a more reasonable Congress and administration.

All this, however, is past. The question is what to do now? The first reaction to a perusal of the Raker Act is the suggestion that no further money be spent. Over $45,000,000 has already been appropriated, and it is stated that $32,000,000 more will be necessary, with no guarantee that this will do more than deliver the water at San Francisco boundaries, with the distribution system still to be provided. Why should good money be thrown after bad? Of course, this is an idle speculation and not a solution. Hetch Hetchy represents too great an investment to be abandoned. It will be completed and both power and water will be brought to the point of delivery.

There remains but one sensible course. This is to take the matter again to Congress and with the wisdom of experience and the hope of a less inimical personnel in that body, ask that the provisions of the Act be modified. There is not the opposition at the present time that there was when the enterprise was undertaken. Nature lovers, rival water systems and owners of other water rights are now all resigned to the inevitable. Some of them are enthusiastic advocates of the present system. It is even possible that with their present provisions for their own storage, the irrigation districts might be willing to consent to less conditional terms which would hold fewer pitfalls for San Francisco's future development. The sensible arrangement of selling power at wholesale to one of the power companies should be permitted without question.

The questionable side to this municipal enterprise has been glossed over long enough. It is time that the public generally understood the facts—and it is also time that something be done about them.

There Is Still a Good Market for Washing Machines

SOME bright statistician has compiled figures which indicate that only one-third of the world's population is completely clothed, while one-half is only partially clothed and one-sixth not clothed at all. This is sad news for the washing machine manufacturers. On the basis of 1,700,000,000 people on the surface of this sphere, there are about 120,000,000 fully clothed families in the market for electric washing machines. After the homes of all of these have been equipped, the washing machine manufacturers will have to adopt a new type of educational advertising. Instead of "Wash Electrically" as a slogan they will be forced to coin some such phrase as "Wear More Clothes." It is not difficult to imagine the enterprising washing machine salesman of the future trying to convince some Papuan housewife on the island of Zamboango that she should have an electric washing machine for laundering the family's gee-strings.

The Furniture People Have Done It

THERE is an institution in San Francisco known as the "Furniture Exchange." Actually, it is a cooperative institution that consists of a permanent exhibit of furniture and furnishings. It is housed in a seven-story concrete building. Space is contracted for in any desired amount, and exhibitors may or may not, as they choose, keep a salesman in attendance. The institution itself keeps a staff of salesmen whose duty it is to conduct those interested to such exhibits as they may be interested in, to give them all information they desire, and to bring them in personal contact with the direct representatives of the exhibitors if they so desire.

Competing lines are found side by side, almost, without drawing even a semblance of a spark of static, in fact, the lion and the lamb lie down together in the most approved Utopian way. Imagine what an advantage it is to a buyer to find displayed under the most attractive surroundings a comprehensive exhibit of what he is interested in, without his having to metamorphose himself into a sleuth and track the merchants to their lairs from one end of a great city to the other!

This is not all. The "Exchange" has telephone service, shipping service, a competent traffic department, a credit department, a board through which all sorts of claims are adjusted without recourse to that expensive luxury known as the law, and attends to numerous other details especially useful to the out-of-town buyer. This is service that is SERVICE.

Suppose, just suppose, that the electrical fraternity could, and would, take a leaf from the book of the furniture men. Suppose, again, that there was such an institution, similarly organized, through which the electrical idea could be established and sold to everybody, the retail trade, the consumer. Let us suppose some more, that there was a service department, to which the housewife could come with her little electrical troubles and receive prompt, efficient and courteous attention. And now for one more suppose, that electrical cooking classes could be conducted for the Mary Anns, the Hashimura Togos, or Sing Fats, or whoever it is that is the director general of the culinary department.

The idea seems to appeal strongly, and is it so impossible of accomplishment? The furniture people have done it. Are they so much more intelligent, more broad in their perspective, than the electrical fraternity? Who will answer this question?

CURRENT COMMENT

Japan has suffered the greatest catastrophe in the history of the world. As this is written, meager reports indicate that the loss of life has been enormous while the property damage has been irreparable. The most highly developed and thickly populated section of the nation has received a blow from which it will take many years to recover.

Some Important Aspects of the Japanese Mishap

As that section of the United States contiguous to the scene of the disaster the Pacific Coast is highly interested in the details. Trade relations have been such that this section has had a closer relationship with the Orient and with Japan in particular.

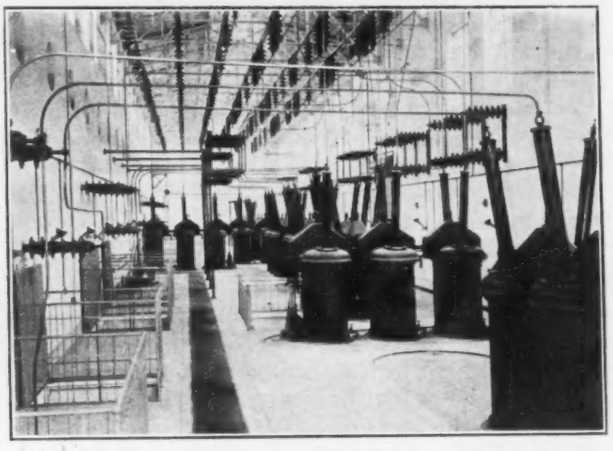
Reports indicate that the offices of both the International General Electric Company and the Westinghouse Electric & Manufacturing Company in Yokohama have been totally destroyed although the staffs of both of these organizations are safe. In a very cryptic radio message, J. R. Geary, manager of the Yokohama office of the I.G.E., stated that that city was in ruins and that temporary headquarters for his company had been established at the Imperial Hotel, Kobe. Frank Fagan, well known figure in the electrical industry on the Pacific Coast, who recently went to Japan for the I.G.E., has cabled that both he and his family are safe.

The engineering aspects of the disaster are many. Services of practically every utility serving the earthquake area have been totally demoralized. Properties of hydroelectric companies, electric railways, steam railways, gas companies and water works have been crippled or entirely destroyed. Enormous sums will be required to rehabilitate these systems. Recent information to the Journal of Electricity indicates that the industrial power demand for the city of Tokyo alone was 180,000 kw. for 1922 and was increasing at the rate of 13 per cent annually. Nearly all factories were highly electrified.

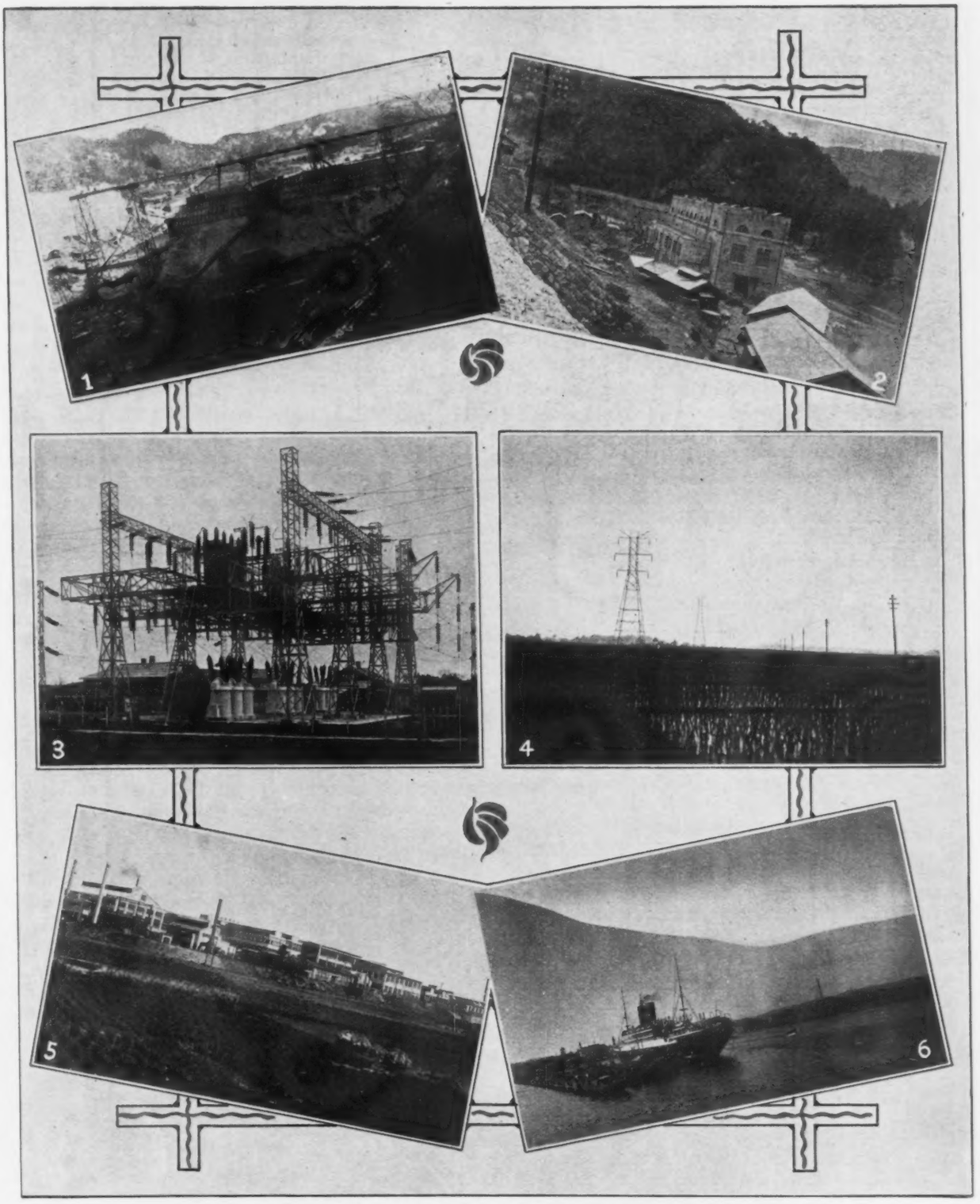
For instance, the plant of the Tokyo Electric Company, Ltd., associated with the General Electric Company, which was located near Kawasaki and Tsrumi, midway between Tokyo and Yokohama, is reported to be a total loss. This factory supplied a large percentage of the lamps used in Japan and had an output of 20,000,000 lamps annually. It employed 3,500 workers, both men and women. In addition to lamps, the factory turned out switches, sockets, fixtures, X-ray equipment and other electrical devices. It possessed an extensive laboratory and was one of the model factories of Japan.

Through the kindness of Thebo, Starr & Anderton, consulting engineers, San Francisco, we are able to offer our readers several exclusive views in and around Tokyo and Yokohama, as well as some of the hydroelectric properties which supply the city with energy. This firm is supervising the construction of a large hydroelectric project for Daido Electric Company, one of the largest Japanese central station companies. The extent to which some of these large hydroelectric plants have been damaged is unknown, however it is certain that they were located within the area affected by the earthquake shocks.

Interior of the 11,000-volt switch room of one of the plants of the Inawashiro Hydroelectric Power Company, near Tokyo.

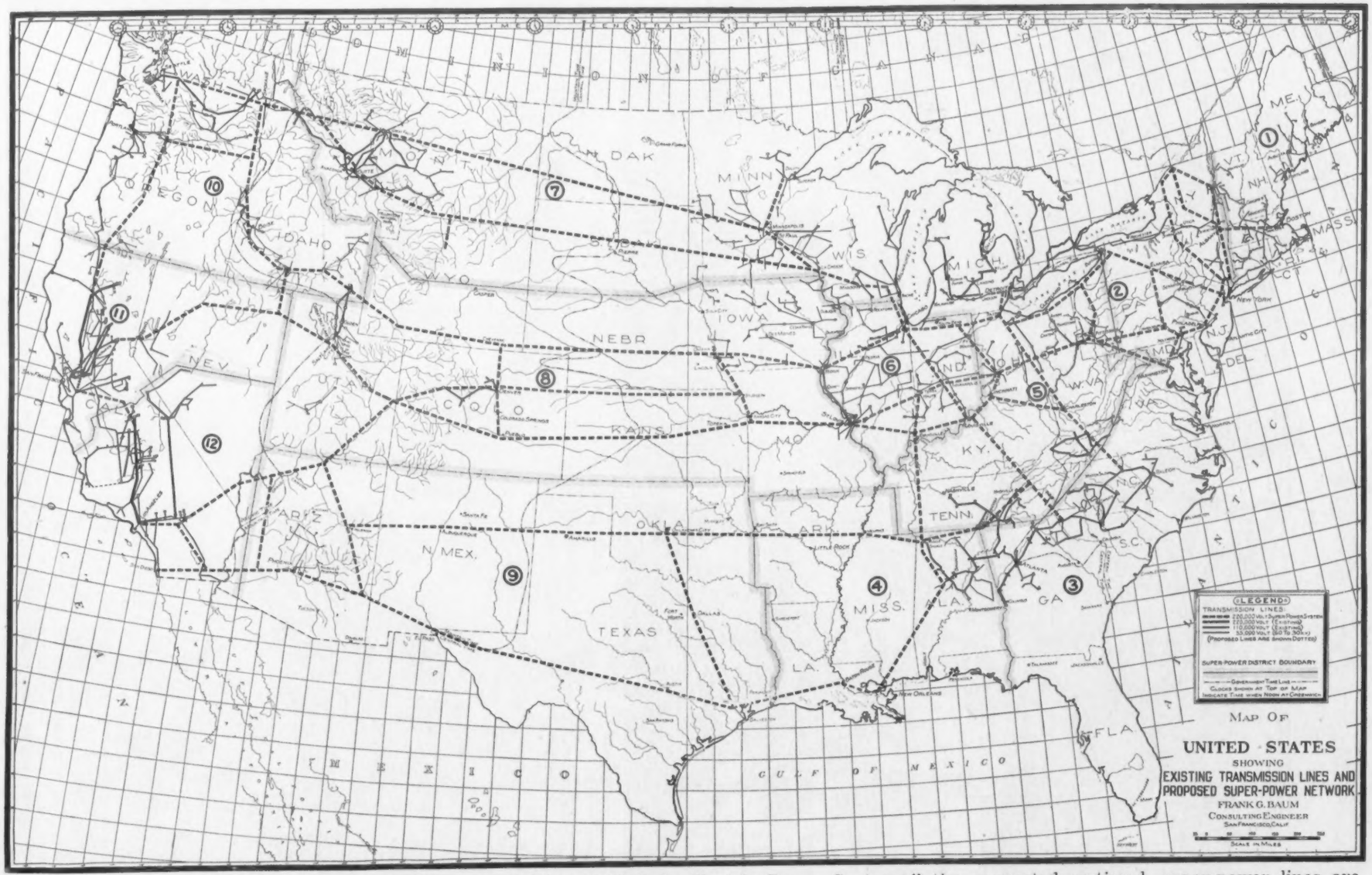


A view of the 115,000-volt switches in one of the hydro plants of the Inawashiro Hydroelectric Power Company.



JAPAN'S ELECTRICAL INDUSTRY SUFFERS FROM EARTHQUAKE

Reports would indicate that the electrical industry in and about Tokyo suffered heavily. Through the kindness of Thebo, Starr and Anderton, San Francisco, we are able to furnish our readers with some interesting views of the stricken area. No. 1 is the Oi dam of the Daido Electric Company on the Kiso River, 60 miles above Nagoya in the earthquake region. This company serves Tokyo and the surrounding districts. No. 2 is the Yomikaki power house of the same company on the Kiso River, also reported to be in the area affected. No. 3 is a view of a 115,000-volt outdoor switching station of the Inawashiro Hydroelectric Power Company on the outskirts of Tokyo. No. 4 shows the same company's 115,000-volt transmission line leading into Tokyo. No. 5 is a view of the factory of the Tokyo Electric Company, Ltd., at Kawasaki on Tokyo Bay. This plant, which manufactures the majority of the lamps used in Japan, is in the heart of the industrial district between Tokyo and Yokohama and is believed to have been totally destroyed. No. 6 shows the harbor and water front at Yokohama. This city was practically obliterated by earthquake, tidal wave and flood.



In the above chart, which is taken from Mr. Baum's "Atlas of U. S. A. Electric Power Systems," the suggested national super-power lines are shown. It will be noted that the Colorado River power will be carried north and east for the electrification of the trans-continental railroads; and south and west to the Arizona copper mines, the irrigation districts along the lower Colorado and to the southern California markets.

Power Must Bear Burden of Development on Colorado River

By Frank G. Baum

MR. BAUM is an engineer of wide experience and reputation. He has carefully studied the Colorado River development situation and has reviewed it from a national as well as a local viewpoint. Full recognition is given to such matters as finance; power sales possibilities; governmental interest; power control; irrigation and flood control. This article cannot but be of interest to every engineer and central station executive in the country.

IN the published pamphlet (Senate Document 172) of the Interior Department, regarding the development of the Colorado River for flood control, irrigation and power, I think there are some statements that are not sound from a power or business standpoint. It is stated that the entire cost of the dam for storing the water should be paid for from the sale of power. To make such a statement without showing that it is feasible to do so seems to me not a very good way to attract the power users to come and use the energy or take it to present or new markets.

It is also stated that the dam should be at Boulder Canyon which is at the lower end of the river. This would of course give a power supply as variable as the water demands for irrigation. There is no power system at the present time large enough to absorb such a large variable amount of power. The final regulation of the water for irrigation should be at the lower end of the river, but if we wish to develop power to the largest amount possible will practically complete control of the river for irrigation, then we **must** have a number of storage reservoirs on the **upper sections** of the river. Also, if the power is to be sold to the largest possible amount, we must look for the widest possible market. The Colorado River development, therefore, if it is to be paid for as far as possible by the sale of power, must be attacked as a power problem—assuming that we satisfy the conditions that flood control of the river is desired, and that the water shall be available for irrigation uses.

What are the power markets for this power, considering the entire Colorado basin?

1. Arizona copper mines, etc.
2. Arizona irrigation, etc.
3. Southern California power market.
4. Santa Fe Railway electrification.
5. Power market developed along railway and as far east as the Missouri River.
6. New industries.

(The future power market for northern California can be better supplied from the Columbia River basin than from the Colorado.)

A total power market of several hundred thousand horsepower should be available, in order to carry the plan with the largest possible contribution from the sale of power, and to make it practicable to lay out a power transmission plan along economic lines.

Let us assume that the sum of these possible power markets is 500,000 to 750,000 hp. Then there comes the question of the best location for the power plants. It will of course be much better to have part of this power developed on the lower section of the river —at the Diamond Creek or Boulder Creek site or at both sites, depending on the amount of power to flow to western Arizona and southern California. But it will be at once seen that the power for the Arizona copper mines and for the Santa Fe Railway electrification east of central Arizona, and the power to go to the Colorado, New Mexico, Kansas and Missouri River markets can be better supplied by plants in the upper sections of the river. The distance of transmission is not the controlling factor, but large dependable economic power supplies, good load factor and large stable markets are often more important than length of transmission.

I believe, therefore, a comprehensive plan for the development of the Colorado River can not be economically made without getting the greatest possible power supply as a byproduct and putting this power to useful work. The amount that may be charged against this power can not be arbitrarily set off, because this power must come into competition with other power all along the line from the West Coast to the Missouri River.

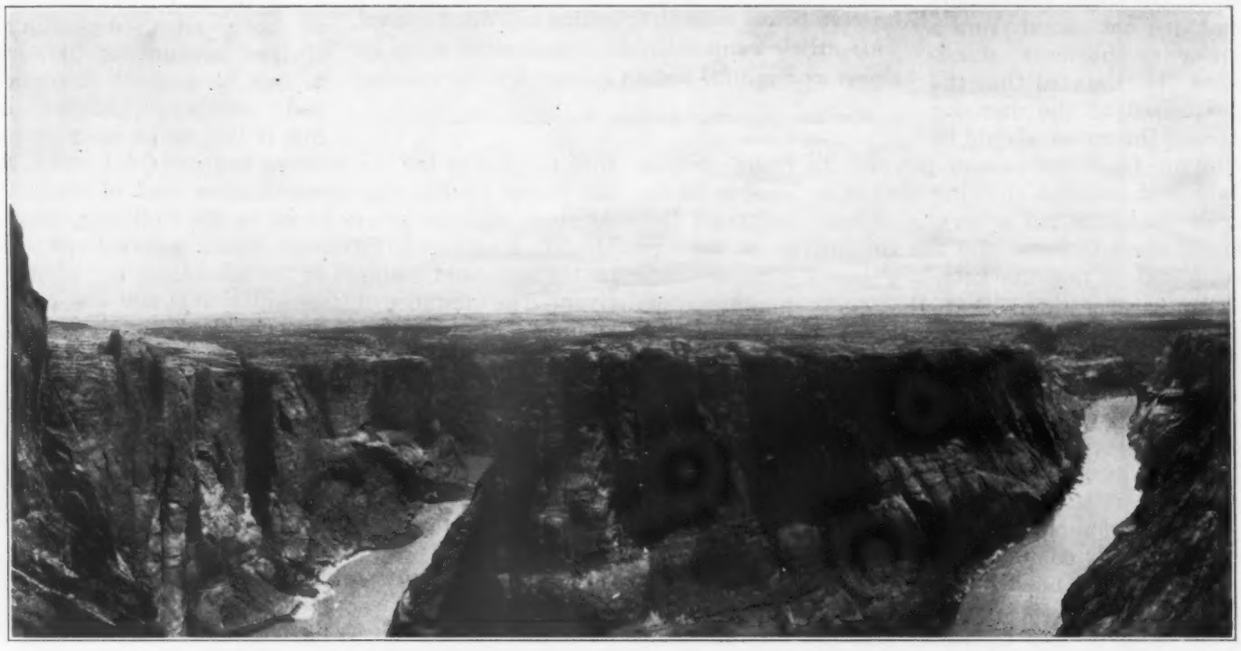
The tendency is for irrigation to exaggerate the value of the byproduct power, and this generally comes from comparing the retail rate for electric light with the wholesale rate for power. The electric light business alone will generally not support any water power development in California or anywhere else. This is evidenced by the fact that practically all the early water powers were failures until the power loads were developed. The electric light business compares with the railway passenger business, and the power business compares with the freight business. Without the freight business the railroads would fail and without the power business the water power companies would fail.

Power Markets Major Factors in Development

It is therefore essential that we consider in a businesslike way how we may market the largest possible amount of power to be developed on the Colorado, and this will then be largely the determining factor in the location of the dam sites and power sites. **The power markets are the major factors, if the power is to carry the major cost of the development.** Also the power plan of the Colorado should be made to fit in the general plan for

power for the entire United States, in order to be of greatest value, **for an isolated power system compares to a bank that has no relations with other banks and has its own circulating medium.**

To make the Colorado developments fit in with such a national power system in the best way requires careful study of all the factors, and political expediencies should not be allowed to spoil this great national asset, for water power should no longer be considered along individual or state lines. The water powers of the Niagara, the St. Lawrence, the Tennessee, the Upper Missouri, the Columbia, the Colorado and the Pacific Coast streams, etc., etc., should all be considered with the idea of developing each resource to the largest possible extent as rapidly as conditions warrant, and have this power flow into transmission systems finally covering the United States through the means of large public service companies.



View of Colorado River showing Glen Canyon and Lee's Ferry dam site.

Such a general power plan has been outlined in an "Atlas of U. S. A. Electric Power Industry." The plan therein suggested was given after much study and work and without influence. The plan in brief suggests dividing the United States into twelve regional power districts, and in each district the power development and transmission would be handled largely by one concern. In each regional district there would be distributing areas served by companies close enough to the consumer to be responsive to their needs.

With such a general plan the electric power systems of the country may grow without developing "weak systems." If the railway construction of fifty years ago could have been directed by a general plan, many of the present railway problems, which are due to "weak lines," would not exist. Electric men know the power resources, and the markets are fairly well known, so we have better knowledge than the railway men had and consequently we should avoid many of the railway difficulties, which were due to a lack of knowledge.

It is easily seen that such a national power system as outlined in the Atlas will make much better use of the potential power sources of the Colorado and other rivers, because the systems will be so large as to make best use of the varying stream characteristics in the various sections. Such a system will also obtain advantage from the time difference between east and west. It will also take best advantage of the diversity of power demands of the different classes of power users in the various sections of the country. The large power system will also be more favorable for financing large construction programs.

Many small water powers are not now possible of development because the cost of taking the power to a market is too high, but with a large system as proposed, the problem of transmission and marketing would practically end at the main transmission system. On the other hand, many large water powers, such as the Colorado and many others, are not now feasible because the market for very large blocks of power is not available; but with a national system (due to the fact that in the eastern part of the United States there will always have to be many large steam power plants to make up the water power deficiency) the market will be available at once.

Such a national power system will reduce the costs of power to local companies, and much reduce the cost of main line railway electrification; and will develop business along railways, thus giving an added reason for electrification. It will cause acceleration of water power developments and result in

demands for capital, labor, copper, aluminum, hydraulic and electrical machinery, steel, etc.

Such a system of electric-power transmission as outlined in the Atlas is necessary for the economic development of this country; for, aside from the economics of such a system in connecting up the surplus power sources with the large consuming markets and in bringing into use many power sources otherwise not feasible of development, such a system will bring about a distribution of the industries and population of the country not otherwise possible, resulting in adding to the general stability of the country. The construction and operation of such a system will raise the country to a higher economic level. Only by such a system can the power resources of the country be made of greatest value.

I have discussed this general plan for the electrification of the United States with a great many public utility men, engineers and economists. The approval of the plan is very general and is very gratifying to me, and I believe the Colorado River power must become part of the plan.

What are the agencies we now have to bring about development on the Colorado and other resources and result in a nation-wide power service?

1. We have a Federal Power Commission that issues licenses for water power developments involving public lands, to public service companies or other agencies that qualify under the act. The licenses granted are for 50 years and may then be recaptured by the United States. Or the plants may be recaptured by condemnation by states or municipalities at any time. We have also State Water Commissions to give licenses for state streams.

2. Public service companies may organize in states for development of power and the distribution thereof. There are many such companies now in existence, a number of which furnish interstate power.

3. Public Service Commissions in the various states generally regulate securities, service and rates. The rates must be reasonable, which in the light of experience generally means that the rates must be such as to attract the large amount of new capital required for development.

With the above three agencies in existence it seems that development on the Colorado River, or on any other stream in the United States, may proceed in the ordinary way, subject to the economic conditions which surround all sound development.

It seems to me, therefore, that a new agency for developing the Colorado is not necessary; and if one is necessary for the Colorado, why not one for the Columbia, for the Missouri, or the Tennessee? It seems to me this would only add complications to bring about what we all desire, i.e., universal power service as rapidly as this is economically feasible in the various sections of the country. I believe thoroughly that this can best be brought about in the quickest time through the privately owned public service companies, publicly controlled through the State Public Service Commissions, and the Federal Power Commission in their respective fields of control and regulation. If the private companies fail in their responsibility, then we may discuss other plans that will bring about the desired result.

It is well known how difficult it was to get the Federal Water Power Act passed. It is now working fairly well, and it seems we may apply our attention to improving and assisting in working with the present agencies rather than disturb conditions with new ones.

Knowledge of Power Problem Needed

The conditions for flood control of the Colorado River can be brought about in several ways, and the same is true of the control of the water for irrigation. If these conditions are met, then that plan should be adopted which gives the greatest possible returns from the sale of electric power. Hence, since the power is to pay a large part of the cost, the problem should be attacked with a thorough knowledge of the facts of the power problem. And no merely local section should be allowed to prevent the ultimate use of the largest possible amount of power to fit in with a general plan for the ultimate electrification of the U. S. A.

It is not generally recognized that every dollar of annual gross earnings added to the utilities requires about $5 in capital expenditure for generation, transmission and distribution. Necessarily this new capital can not come from earnings, but must be provided from the sale of bonds or other securities. And one of the great difficulties of ownership of a rapidly growing business like the electrical industry, by the United States or by the states or municipalities, is that to get the new capital we must go before the voters and ask for approval for bonds at an election. The private companies merely ask the approval of the directors. The delay in getting the approval of the voters may seriously hamper development.

Los Angeles a few years ago took over the distribution system of the Southern California Edison Company in the city. Now they have no money for extension of facilities. If Los Angeles can not solve the problem of distribution in the city, how can they expect to solve the much larger problem of the Colorado River power? We have a similar case in San Francisco, which city has almost completed a water storage system, a power plant and transmission system, but has no distribution facilities. The stockholders of a private company delegate the authority for the sale of securities to their directors, but the voters will not delegate similar authority to their elected representatives.

In my opinion, as a result of very extensive studies, I am firmly convinced that all such by-product power as will result from the Colorado River, from the Hetch Hetchy water supply, etc., should be leased or sold to private power companies at the power sites. Then the power available will flow with the general power system of the country and in this way these local powers have a much greater value than otherwise.

Public Ownership a Vital National Issue

By J. D. Barnhill
President, Evans & Barnhill, Advertising Specialists, San Francisco and New York

IF it be true that "a stern chase is a long chase" it is equally true that a defensive fight is a fight half lost from its inception. Victory for the defense means only an attack postponed, while victory for the offensive leaves the defeated party with depleted courage, damaged assets and the stigma of guilt. Furthermore, a defensive fight starts with an assumption of right on the part of the side taking the initiative and a corresponding implication of guilt on the part of the defense. When, therefore, the attack is launched by those temporarily clothed in authority the implication of guilt on the part of the defense is doubly implied, and a defensive fight made doubly dangerous.

WHAT a ridiculous picture is presented by our public service corporations! With every favorable attribute on their side, moral and economic, they wait supinely for the public ownership politicians to attack them and force them to defend their position against an indictment that is based on the uninformed state of the public mind—an indictment composed of half-truths, subtle innuendoes, and twisted economics, an indictment made in the name of authority, whereas no such a position could be assumed if the case were to be tried before a thoroughly informed and interested public conscience. And with the public service corporations lies the privilege as well as the **duty** of informing the public mind of the truth of private enterprise in public service. The power companies, for instance, have performed a marvel of economic achievement, and are administering that achievement to the welfare of the people, and are administering it in a progressive scale of economic benefit, yet the people because uninformed are quick to believe the colorful attack and unsound arguments of the professional politician. A giant in achievement, a pigmy in defense. A sound and capable servant in fact; a legalized and predatory criminal in the eyes of a fair, sane, but **uninformed** public.

What, then, is the pending case of The People vs. The Public Utilities? Very clearly, it is The Public Ownership Drive attacking the entire electrical industry. The question of public relatins with public utilities is a very vital national issue today. The problem that the electrical industry is facing on the Pacific Coast is no different from that of any other section of the country, except that the entire country is looking to this section for the solution, because it has learned that practically all of the major problems of the past ten years in the electrical business have been solved by men here on the Pacific Coast, and it expects the Coast to repeat its performance in this important issue.

In a comparatively short time the electrical industry has established a record of almost unparalleled accomplishment. But the very fact that electrical development has gone ahead at such a rapid pace and that it affects the daily lives of so many people makes it a conspicuous mark for public criticism or legislative interference. As a public servant, the public utilities are subject to frequent review and attacks in the form of public ownership programs and competing electrical developments by municipalities and other political divisions. Such criticism is due to misunderstanding and such attacks are based upon a lack of accurate information. Therein the public utilities corporations are to blame. Public utilities under government regulation have no reason to, and should not, withhold important facts from the public. That the utilities have not taken advantage of their opportunity to transmit and register correct information is manifested by the public in individual and combined attacks upon the power companies. The very character of these attacks and the procedure followed proves that the public does not have a fundamental knowledge of the electrical industry. I was surprised not long ago to have a prominent business man ask me if I thought that the power companies actually wanted to give the public a square deal. You ought to know what the people think of you, you ought to get that knowledge and use it.

There has developed throughout the world, and there is being manifested in the United States today a spirit of unrest which is popularly expressed by the term, "Bolshevism." The attempt to control the railroads of the country was unsuccessful, because the railroads, as interstate commerce carriers affecting wide ranges of territory, could not be quickly and completely organized. Nevertheless, it is a warning, and it points to one very definite fact, that of all the public utilities in the United States today the power companies are most vulnerable because they are isolated and it is therefore possible by taking a section here and a section there to obtain by attrition, a complete and unanimous movement, which some morning will cause us to wake up and find with us public ownership of public utilities, as we found prohibition, over night.

According to my best information and belief, the agitation surrounding public ownership of public utilities is the result of political exigency. Politicians must have a political issue at each election. In searching for such issues they have discovered that the public utilities are vulnerable because they are isolated and located in separate political subdivisions. It is consistent with political tactics to use an issue such as public ownership in separate political subdivisions in turn so as to prolong its usefulness as an issue. Sound economics and good business have no consideration. Such activity is considered entirely from the standpoint of its value as a

basis for political maneuvers and issues. Professional politicians study these matters and plan as carefully as any business organization develops its operations. It is their business. Even a superficial study of the tactics of the politicians shows that their strength lies, and the opportunity of final success is provided, in attacking the issue in smaller political subdivisions such as cities and counties.

A recent practical illustration of this method of attack is shown in California. The state-wide so-called Water and Power Bill was defeated on an average of about three to one in this state last year. Since then the city of Oakland has voted on an issue favorable to public ownership and Sacramento has voted a public ownership project by a majority of five to one. This experience would indicate two things: First, that public utility organizations become aroused by a state-wide issue, put forth an organized effort and make it their business to fight the issue with satisfactory results. Second, that politicians playing upon local conditions and with a thorough organization pitted against the lack of such organization on the part of utilities, are successful in their efforts.

Failure to Meet Crises

It appears evident that history may repeat itself in the matter of public ownership. Public utility officials do not appear to be aroused to the seriousness of the present situation. These officials have devoted their time and resources to sound and progressive development of the properties for which they are responsible. It has not been a part of their job to anticipate a political crisis. When this crisis arises, the power companies by and large are not prepared or organized to meet it. It makes no difference that they have established wonderful records of performance and have met every obligation of public necessity. Such facts are not effective against political plans because politicians are not concerned with such facts. They are concerned only with the opportunity to swing votes around an issue for personal gain. The politicians have already obtained a good start and even now, it may be too late to stem the tide. On the other hand, it seems clear that the power companies must immediately and aggressively protect their business life and property or plan definitely to redeem the properties and go into some other business. I do not infer that the power companies are not anxious to protect their business but I do submit that they have not proceeded against this political problem in the same orderly manner in which they have approached their business and engineering problems.

There are two methods of handling things of this nature. These were clearly demonstrated in recent activities brought about by a vote in each of two very large political subdivisions on the subject of public ownership. In one section the power companies, the jobbers, and the retailers openly withdrew their organization from their regular work, insofar as they could, and keep their business going, and under direct instruction, publicly acknowledged, spent their time fighting it. In another section a different method was used. The power companies and jobbers and the other people connected with the industry, got behind a stalking horse. The answer was that in the open fight territory the vote was five to one against the measure and in the other territory it was barely two to one against it. Does that have any practical significance? Is it not right and proper that any man should openly defend his business, life and property? The time has come when the electrical people shall declare themselves to the public. The public is always fair when it knows; and it does not know today. It does not know that under the clean and skillful business management of the privately owned companies the rates for electrical service show an absolutely declining curve, and that under the plans and direction of that same management that curve will continue, and that this is the only practical and logical way in which that can be assured to the public.

In discussing this situation with some of the leading officials of power companies throughout the United States I have had some of the biggest men say this: "Gentlemen, we are and shall continue to be in favor of lower rates." That is good business. Any business conducted along business lines is interested in an increase of volume and an increase in return on invested capital which will enable it to serve its customers at a lower cost, at a competent rate of return on the investment and effort. That is absolutely sound.

Problem Is Social One

The problem of the power companies today is no longer an economic problem—it is a social problem, and the economists of the world realize that the way to solve an economic problem is through its social aspect, because no economic problem is universal in its effects unless it materially affects the sociological life of our people. To illustrate, fifty per cent of the connected service points of the power companies today are to dwellings where women use the service. Women have at least fifty per cent of the say in the point of view and in the attitude toward the power companies with the men. By the very nature of their work women get more benefit from utility service than anyone else and if the women understood the utility point of view in rendering that service, they would be strong friends and supporters. I doubt whether the advertising departments of many power companies have ever taken women seriously into consideration. I doubt whether they have made anything like a fifty-fifty break in the definition of their service in terms that women can understand as against the advertising they are directing toward the men and the industrial elements of the electrical business.

Up to this time the power companies have had to meet and solve the tremendous problems of generating and transmitting energy in a highly efficient and economical manner, and they have done this well. They are now face to face with the next and final step in their responsibility and that is to make the people conscious of the fact that delivery has been

made in the most economical, in the most efficient, and in the most satisfactory manner possible.

We have a sixth sense which I choose to call "impression," and impression governs the commercial life and to a large degree the social life of our nation. No matter how efficient and practical you may be in your actual operations, unless the people get the proper impression you have failed to capitalize on your greatest asset—favorable impression. It is unfortunate that the highly cultivated brains of the industry have been so busy with the practical problems that they have not had an opportunity to give thought to this sociological feature. As soon as they do the answer will immediately begin to unfold. Criticism arises from misunderstanding, and this misunderstanding in turn has its origin in wrong impressions which have been permitted to grow in the public mind. The industry has a great story to tell. It has a field of almost unlimited usefulness and its development of that field has been startlingly rapid. But its accomplishments have been dimmed and its usefulness curtailed by the lack of clarity with which its operations have been reported. Such terms as kilowatts, horsepower and other technical definitions are meaningless symbols to the people as a whole. These must be translated into terms of what electricity is doing and can do for the benefit and comfort of the individual. Since advertising is one of the most effective and inexpensive methods of molding impressions, it is necessary that the impressions which it forms have their basis in fact. When the electrical industry tells its story to the public there must be no possibility of misunderstanding on the latter's part. The situation imposes the double necessity of carefully analyzing the conditions existing in the territory and determining the trend of public sentiment in relation to the industry. Having developed the facts they must be reduced to a definite and workable program and correctly interpreted to the public.

The Value of Advertising

Within the next five years, according to an analysis supported by government figures and a cross-section of the opinions of all the leading economists of the United States, there will be constructed 1,640,000 buildings, one-half of which will be residences. This imposes upon the electrical industry a responsibility which it has never had to face before, and because of this tremendous activity the public will be forced, by reason of the pressure of surrounding thought, to consider more seriously what the power companies are doing with their responsibility. While this building program provides an unusual opportunity for increased revenue, it also makes the situation of the electrical industry more critical. If there has been opposition to individual development of electric power during the past—opposition based on lack of knowledge of true conditions—this opposition will be spurred into more formidable activity by this expansion in the building trades. Not only will the opposition grow through its lack of knowledge, but it will be played upon by the active sponsors of state and municipal ownership of this and similar utilities.

Here then, is presented a grave danger to the electrical industry, a danger that can be converted into a positive and friendly force by the simple process of popular education through frank, positive and constructive advertising. The electrical industry must carry its case to the people, and carry it right now. Advertising has pleaded similar causes before the court of popular opinion—pleaded them well and won the decision. The public utilities are spending a sufficient amount of money in their advertising efforts today to win their case in the court of public opinion. I am very definitely of the opinion, however, that they are not even on the target. They are putting a merchandising story into commercial language. The greatest effect of their advertising is among themselves. The electrical industry has spent the greater part of its time for a number of years talking to itself both in personal activities and in advertising.

No merchant would be satisfied to ask a word of mouth discussion of his property to stand as the definition of his value in the community. That is not done any more in modern business. Men have learned to use the power of the printed word to create sound thought, and no individual in a community can resist the pressure of surrounding thought, except he be a political shyster with an ax to grind, or that he has an opportunity to take advantage of the opening left and play upon the ignorance or the wrong impressions or the lack of understanding of the public. Tell them things which may be accepted as facts without refutation, and get your story over.

As I understand it, when an emergency arises such as a constitutional amendment or a local vote on public ownership, the public relations department of the power company is expected to get into immediate action. In the general course of business, the public relations department is trained to function in matters of its business relations with the public. Without men specifically trained to study political procedure, it is more or less unfair to expect the public relations officers and organization to perform with full effect.

Your political opponents would ask nothing better than to be permitted to attack public ownership section by section under cover. The thing they would fear most would be to bring the fight out in the open and have it over with. A bill pending before a state legislature on a constitutional amendment or some other political subterfuge arouses exactly the kind of political turmoil out of which the politicians expect to profit. A widespread, clean-cut dissemination of real facts is poisonous to the politician. Advertising in page space which clearly and decisively states the real facts cannot be successfully met by the usual political procedure.

The American people are fair when they know the facts. The people are neutral today—they are open to conviction. However, unless something definite, something simple and direct, is done I firmly believe that within five years we shall have public ownership of utilities. And I issue that as a solemn warning.

The third-floor stock room of the Capital Electric Company. Small devices are kept in the bins below the shelves.

Setting a Standard for Electric Warehousing

WAREHOUSING is an essential part of the service of the western jobber. His stocks must be such that they can be drawn upon from time to time by the dealer, his function in many respects being similar to that of the forebay reservoir of the power system, insuring the continuous flow of merchandise along its normal channels. With many concerns the warehouse is a backyard affair to which very little attention is given except that it be fireproof and not too congested to permit of fairly prompt deliveries. The electrical jobber, however, has learned that the warehouse has a more important function than this implies.

The model warehouse is a well designed building with storage space and facilities so planned that the goods are arranged in some logical and orderly manner. Material from broken boxes is neatly piled on shelves, preventing damage and affording saving by keeping the goods in first-class condition. By doing away with the confusion resulting from a random arrangement and by grouping together those items naturally associated, considerable time in shipping is saved, to the satisfaction of the customer, as well as to the reduction of overhead. The favorable impression made upon visitors and out-of-town customers is no small item in listing the advantages of an up-to-date storage department. When these visitors are contractor-dealers, the model layout serves not only as an indication of the progressive spirit of the jobbing house, but also as a pattern of how it may be done which can be taken to heart by the dealer and applied to his own problems.

The Capital Electric Company, located in its four-story, fireproof building at 410 West Second South St., Salt Lake City, is a splendid example of the modernly equipped electrical jobber. Its new building is modern to the last and least detail, inside and out. It was planned and built with the needs of the concern specifically in mind, arranged to house efficiently the two branches of the business, electrical products and automotive supplies.

Modern Stock Keeping Arrangement Used

The four spacious floors and large full length basement afford ample room for display and stocking. The two lines of stocks are completely segregated. The basement, ground floor, second floor and part of the fourth floor are devoted to generous stocks of electrical supplies. The third floor, with practically 10,000 sq. ft. of floor space, is devoted entirely to automotive supplies and garage and storage battery equipment.

Stocks are arranged throughout so that related materials are to be found on the same floor and so far as possible on adjacent shelves. This is a small item, but when hundreds of orders must be filled, there is considerable saving of time in not having to take a number of steps to obtain two types of materials which repeatedly occur in the same shipment. This is facilitated by the fact that material is catalogued with the same idea in mind and by following catalog numbers, an arrangement approximating this desirable result may be attained. The name of the material and the listing are plainly marked on neat

THE office of the Capital Electric Company in Salt Lake City, is situated in a large well lighted room. In the center may be seen the city sales department which is located on the main floor of the four-story building. The switchboard manufacturing department of the company is shown in the lower illustration. Repairs to motors are made in this department.

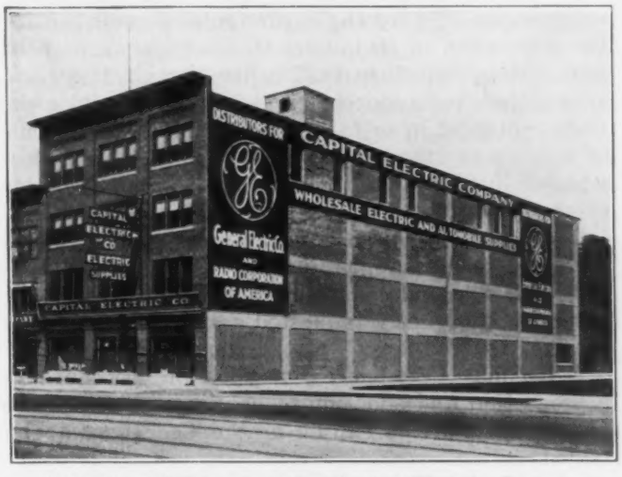
labels so that the contents of the shelves can be easily identified, even by a novice.

In order to expedite the filling of orders, the entire stock is card indexed, by name, number and location on the shelves. A complete file is kept in the main office and on each floor an index of all material stored on that floor. When an order comes in, it is transferred to the appropriate company forms and is then routed from floor to floor according to the location of material, starting, of course, at the upper level. As the items are obtained they are checked off the order, the completed slip being sent in to the shipping department with the last installment.

A complete system of chutes from floor to floor connecting with the shipping department below makes possible the ready transference of material. Another entirely separate arrangement of interfloor stairway communication is provided, completely shut off from the storage rooms, so that access to all parts of the building may be had without passing through the warehouse quarters. No one is allowed on these floors except the attendant in charge or properly accompanied visitors. This makes it possible to insist upon neatness and uniform storage methods throughout, with some one person responsible.

Covered Bins Used for Small Articles

No open material is allowed in the aisle. Packages or individual accessories are immediately removed from broken boxes and stored on the shelves opposite. Small material which cannot be stacked is placed in covered bins, provided below the boxes. The shelving is uniform so that it could readily be knocked down and the lumber used again if so desired. The bins are an idea which has been developed by this company. They are of uniform size, but may be subdivided to meet the needs of particular equipment. The cover aids in keeping the material in good condition and prevents losses through metal parts becoming tarnished and shopworn. A neat label fastened to the cover gives information as to the contents. Perhaps more than any other one item in the arrangement, these bins have attracted the attention of visitors and have been copied by others for application to their particular needs.



Salt Lake City home of the Capital Electric Company.

Package material is neatly stacked on the shelves, as carefully as though the stock were continuously before the eyes of the public. Packing, containers, and odd pieces of paper are cleaned up and removed—not allowed to litter up the storage space. All this is a very simple matter to take care of provided it is not allowed to accumulate, but any deviation from this rule would soon result in a confusion which would nullify all the good results of the system.

Not only are these floors kept in condition by systematic orderliness and by periodic cleaning, but every so often, walls and ceiling are repainted and refreshed. Some attention is being given at the present time to the use of a wall paint which will not be permanently affected by the smoke and fumes which are the natural result of the mining activities in the vicinity of Salt Lake and which can be washed at intervals.

A model wiring system has been installed, which not only provides adequate light for the prompt and accurate locating of material, but serves as a sample of what illumination should be provided in other buildings. When a question of this sort comes up, the contractor can say "Have you seen the Capital Electric installation?" and secure permission to take his prospect through.

Provisions for Sales and Executive Departments

On the main floor of the building is the city order department, where short orders can be filled over the counter with the least delay to the customer. Two full-sized windows offer the opportunity for the attractive display of goods which not only interests the passing public, but serves as an advertisement and may suggest ideas to the visiting dealer of some effect which he can obtain in his store.

All office departments are located on the top floor. This has several advantages. Generous window light, as well as skylights provide sufficient daylight, so that artificial light is entirely unnecessary during daylight hours. This arrangement further obviates the necessity of retracing steps in the filling of an order, the business following the natural channel, starting on the top floor in the office and passing down through the stock rooms to the shipping department on the ground floor.

The company also operates a fully equipped electrical factory, where switchboards and panel boards are made and motor repairs are handled. This is an enlargement of the jobber's service which fills a real need in a district so distant from the factories where the goods handled originate—and is one of the busiest of the company's departments.

The building has the reputation of being the most up-to-date of its kind west of the Mississippi River—and under the successful management and direction of J. A. Kahn, president of the company, has illustrated the practical value of modern ideas in actual service.

The National Electrical Code

By Claude W. Mitchell
Electrical Engineer, Board of Underwriters of the Pacific, San Francisco, California

THIS is the first of a series of articles by Mr. Mitchell, explaining the code and its provisions. Inasmuch as there have been numerous changes in the provisions and arrangement of the Code, great care has been taken to explain fully and to clarify its various sections.

IT hardly seems necessary at this time to relate the early history in connection with the National Electrical Code, but for a certain reason I wish to refer to it briefly. Apparently it is the belief of a great many that electrical inspection departments, particularly those designated as "Underwriters," spend a large portion of their time in making or framing rules, and that such rules are conceived within the confines of the inner office and handed out without regard to their necessity or thought as to what may be the effect of their enforcement. In the minds of many there seems to be a vague, intangible picture of a mysterious being known as "The Underwriters," possessing the power and authority summarily to make or break the rules of the National Electrical Code, and when a new edition of the Code is issued the Underwriters merely make what changes they desire without consultation with any of those affected. It is to correct this erroneous impression that it seems advisable to state a few facts regarding earlier editions of the Code as well as that soon to be issued.

In 1881 and 1882 the New York Board of Fire Underwriters and the Boston Manufacturers' Mutual Fire Insurance Company issued rules pertaining entirely to arc-light installations. Various sets of rules differing considerably from one another were issued by insurance-rating organizations until the early part of 1892. At that time representatives of underwriting boards from New England, the Middle, South Atlantic and Gulf States met and prepared rules. Out of this meeting grew the Electrical Committee of the Underwriters' National Electrical Association.

In 1897 there was held the first national conference of delegates from the American Institute of Architects, American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Street Railway Association, Factory Mutual Fire Insurance Companies, National Electric Light Association, National Association of Fire Engineers, National Board of Fire Underwriters and Underwriters' National Electric Association. As a result of this conference the first edition of the National Electrical Code was issued. From that time up to and including 1909 the Code was issued biennially under the direction of the Electrical Committee of the Underwriters' National Association, but representatives of other organzations were present at the meetings and took part in the discussions.

The 1911 edition of the Code was prepared by a committee of the National Fire Protection Association, it having been decided to turn this work over to the Association because it has for its active members national associations other than underwriting organizations and prepares other standards pertaining to fire protection and fire prevention. While most of the members of the old Electrical Committee are now members of the Electrical Committee of the National Fire Protection Association, the membership of the latter has been enlarged so that it now includes representatives of the American Institute of Electrical Engineers, American Electric Railway Association, National Electric Light Association, Association of Electragists, International, Electrical Supply Jobbers' Association, Electric Power Club, Association of Edison Illuminating Companies, Associated Manufacturers of Electrical Supplies, United States Bureau of Standards, Underwriters' Laboratories and the Electrical Inspection Departments of the cities of New York and Chicago.

It is evident, therefore, that the Underwriters were responsible for the earlier rules established for the regulation of installing of electrical apparatus and wiring, but since 1897 other organizations and associations have cooperated in the effort to have the Code represent in so far as is possible the consensus of opinion as expressed by all branches of the electrical industry and allied interests. It is the desire of the Electrical Committee of the National Fire Protection Association to have given to proposed additions to or changes in Code regulations all publicity possible and constructive criticism is not only invited but urgently requested. There has been no attempt to "put over" any of the rules. As proof of this, may be cited the method of procedure in presentation and adoption of changes which will be incorporated in the edition of the Code soon to be issued.

The Electrical Committee has about thirty members and from its membership are formed several Standing Committees, each having assigned to it all matters pertaining to some subject or group of subjects covered in the Code. Each Standing Committee has one or more Technical Sub-Committees, the number depending upon the number and nature of the subjects to consider. The membership of each Technical Committee is composed of members of the Standing Committee of which it is a sub-committee and of representatives of the electrical industry directly concerned with the subject it has for consideration.

Some of these committees were at work on proposed changes in the Code for more than a year before the time for completing their reports. One committee held public hearings in New York and Chicago in an effort to obtain expressions of opinion from as many as possible.

In November, 1922, the Electrical Committee met to consider reports of the Standing Committees. Three days were spent in this work and the adopted recommendations were then published in pamphlet form and issued as a bulletin to the public about the first of this year. This bulletin contained an announcement of a public hearing to be held in New York on the twelfth of last March, when persons having criticisms of the proposed changes as contained in the bulletin would be given an opportunity to present their objections.

The public hearing was held as scheduled, there being present between 300 and 400 persons, and one entire day was spent in discussion. The Electrical Committee then spent three days in considering the proposed changes and the recommendations made at the public hearing, and the changes adopted at this meeting are the ones which will appear in the forthcoming edition of the Code.

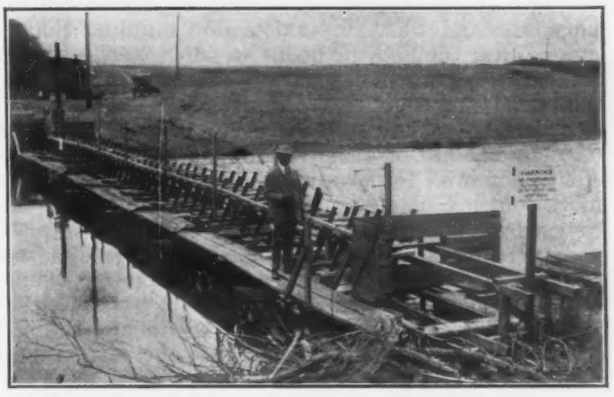
The general form and arrangement of the last edition of the Code (1920) is the same practically as that of the first edition. From time to time new subjects have been added and additions made to existing sections but apparently without any great attempt at co-ordination. In a sense the Code might be termed an accumulation of rules. Because of this fact it is rather difficult for one not thoroughly familiar with its contents to locate all rules pertaining to whatever point may be in question. This has been realized for some time but the Electrical Committee took no definite action until the 1923 edition was under consideration. As a result of this action a special committee was appointed to recodify the entire Code. This committee has rearranged and rewritten the material of the 1920 edition together with all revisions and additions adopted for the 1923 edition. The contents will be grouped under headings as follows:

Definitions
General
Outside Work (Pole Lines)
Services
Wiring Methods (Open Wiring, Knob and Tube, Conduit, etc.)
Conductors
Outlet Boxes and Cabinets
Automatic Protection of Circuits and Appliances
Grounding
Rotating Machinery and Its Control Apparatus
Transformers
Switches
Switchboards and Panelboards
Fixtures (Lamp Sockets and Receptacles, Plug Receptacles and Other Outlet Devices)
Lamps
Heating Appliances
Resistance Devices
Batteries
Lightning Arresters
Cranes and Hoists
Elevators
Extra Hazardous Locations
Garages
Motion Picture Studios
Motion Picture Projectors and Equipment
Organs
Radio Equipment
Signs and Outline Lighting
Theaters
Small Isolated Plants
Systems and Voltages of Over 600 Volts
Signal Systems

A few diagrams will be supplied as they will be especially useful as supplementing the text. Succeeding articles will deal in detail with the provisions of the new code and will contain full explanation of its arrangements and provisions.

Electrical Fish Stop Saves Game Fish From Irrigating Canals

A novel illustration of one of the many interesting uses to which electricity has been put is obtainable at the Burkey electrical fish-stop, operated by the California Fish and Game Commission at Wahtoke Lake, near Navelencia, in the territory served by the San Joaquin Light & Power Corporation.



Trout, bass and other game fish of the Kings River are prevented by this electrical fish stop from entering the irrigating canals and being cast up on the fields.

This apparatus consists of a double row of iron bars, inserted into the bed of the 90-ft. irrigation canal, at distances of 24 in. apart, and charged with 110-volt, electric current which passes through the water.

The object of the fish-stop is to prevent the trout, bass and other game fish which are native to the Kings River, out of which the canal flows, from drifting down the ditch to be washed out on the land, where they die after the headgates of the canal are closed and the water recedes. It is said that the game fish come down the stream tail first. The current of electricity causes the fish to remain upstream, out of the charged area. The non-game fish come through the barrier head first, and are stunned by the electricity.

The barrier requires 2.4 kw. to operate and consumes practically 400 kw-hr. of energy per month. It is operated at a cost of approximately $12 per month.

This installation will prevent the needless killing of thousands of game fish in this canal, and will greatly lessen the number of non-game fish which infest the Kings River at this point.

COAST Outlet
ELECTRICAL CONSTRUCTIONISTS' and DEALERS' NEWS

Electrical Construction

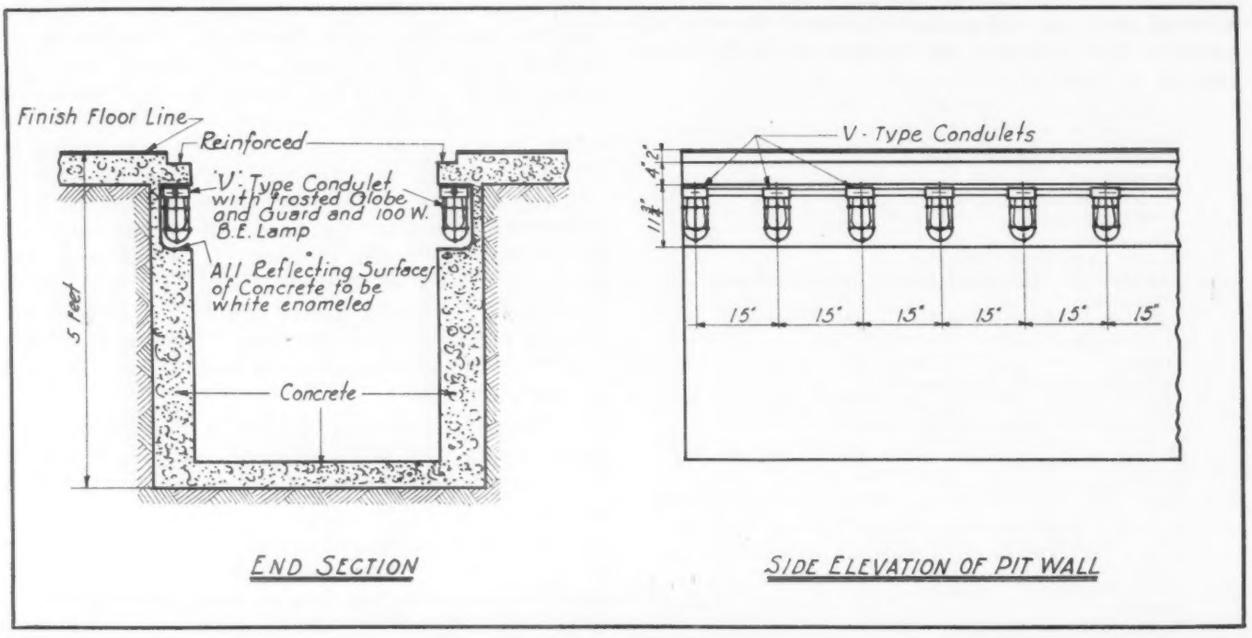
By E. Earl Browne

GARAGES are divided into two classes, public and private. The 1920 National Electrical Code defines a "garage" under Rule No. 42 as "a building or portion of a building in which one or more self-propelled vehicles carrying volatile inflammable liquid for fuel or power are kept for use, sale, storage, rental, repair, exhibition or demonstration purposes, and all that portion of a building that is on or below the floor or floors on which such vehicles are kept which is not separated therefrom by tight, unpierced fire walls and fire-resisting doors."

Section "a" of the above rule requires the use of metal conduit or armored cable in garages of sufficient floor area to permit the storage of three or more vehicles. Metal raceways (metal molding) can be used in offices and showrooms only. In the ordinary private garage which is used for but one or two vehicles, knob and bushing construction is permitted. All outlets and junction boxes must be located at least 4 ft. above the floor, which means that all convenience outlets must be installed at this minimum height instead of center of baseboard height as in the usual building. This point is important in estimating the circuit conduit and wire on a garage job as this extra rise and drop will amount to 7 ft. or more per outlet. Throughout this rule 4 ft. as a minimum distance from the floor is required for all apparatus where the circuit is designed to be opened or at which sparking may occur, such, for example, as portable connectors, panel boards, switchboards and charging panels, elevator hatch limit switches, motors and generators.

When apparatus is fully enclosed by cases or vapor-proof enclosures they may be less than 4 ft. off the floor. Commutators must be provided with wire screen guards of not less than No. 14 mesh even if 4 ft. or more above the floor unless they are fully enclosed. All portables must be equipped with keyless molded composition or metal sheathed porcelain sockets and handle, guard and hook, and the cord must be of a type such as "P," "CA," "PA," "PWP," "PKWP," "PAWP" or "T," all of which are designed for rough usage. The following type cannot be used for such service: "C," "CB," "CC," "PD," "PO" or "PS." If flexible cord is used for ceiling lights it must be of the reinforced type.

In garages as well as all other occupancies the question of adequate light is being given more than passing concern, particularly in the cleaning and service departments. Anyone who has worked on a machine under daylight conditions and then attempts the same job under insufficient artificial illumination,



Figs. 1 and 2

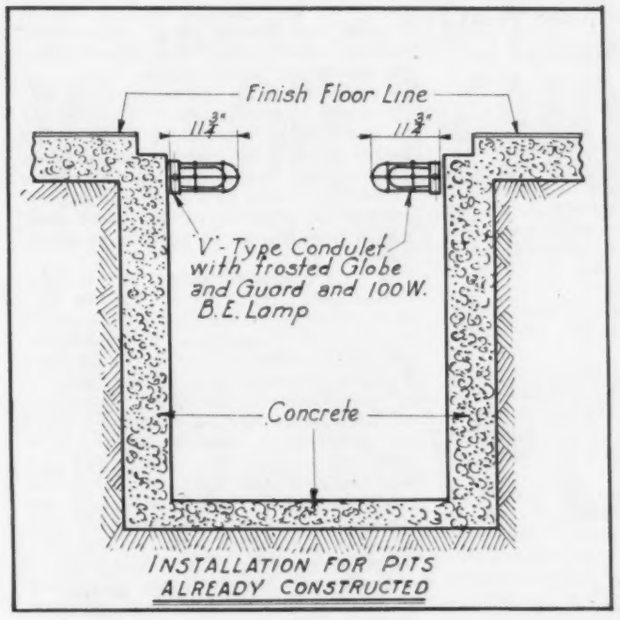


Fig. 3

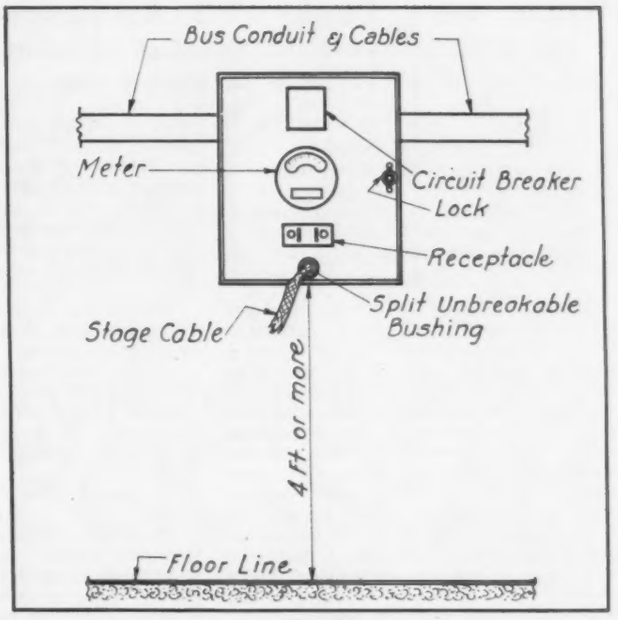


Fig. 6

will agree that a labor saving of 50 per cent is entirely too conservative. The pit seems to be the accepted means of working conveniently under the car, and as that is the portion where the finest work must be done on jobs not requiring the entire removal of the engine, transmission or differential from the car, yet it is the darkest in the ordinary garage. It is quite a problem to properly illuminate this under section and still keep the glare from the eyes of the mechanic. Figs. 1 and 2 show one scheme which can be used with good results and with proper portables with guards and reflectors to supplement this general illumination, a job free from obstructions is accomplished.

A more efficient installation could be accomplished if the general illumination were installed on the pit walls, as per Fig. 3, with reflectors throwing the light rays upward, but this scheme tends to obstruct the working space excessively and also greater breakage of lamps and globes from falling tools, etc., will make the upkeep more expensive.

Proper reflector equipment at the wash rack is important and a suggestion for an adjustable installation is given in Figs. 4 and 5.

As the electric truck is coming into its own for delivery purposes, the garage of the future will be equipped for recharging of the batteries and if the expense of operation is to be handled intelligently a system of metering in combination with a reverse current circuit breaker is necessary even in a private garage with current being used for two or more such vehicles or for one vehicle and other uses. In the public garage such a system is absolutely necessary and in order to provide for this service a bus system of conduits, cables, plug boxes, etc., would be installed in a manner similar to Fig. 6.

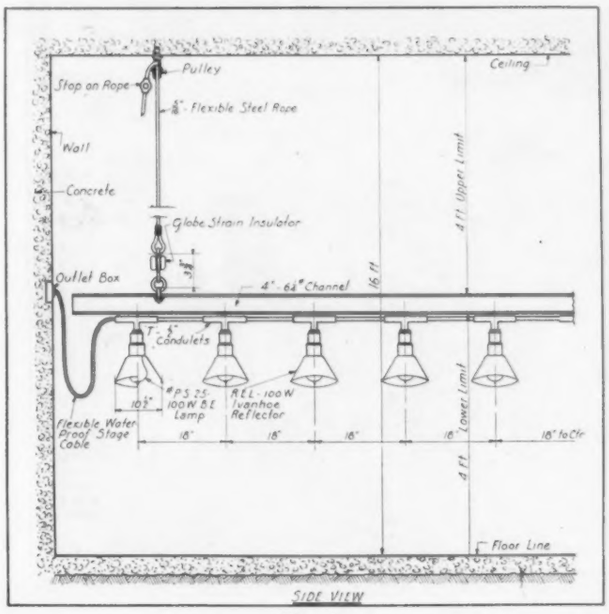


Fig. 4

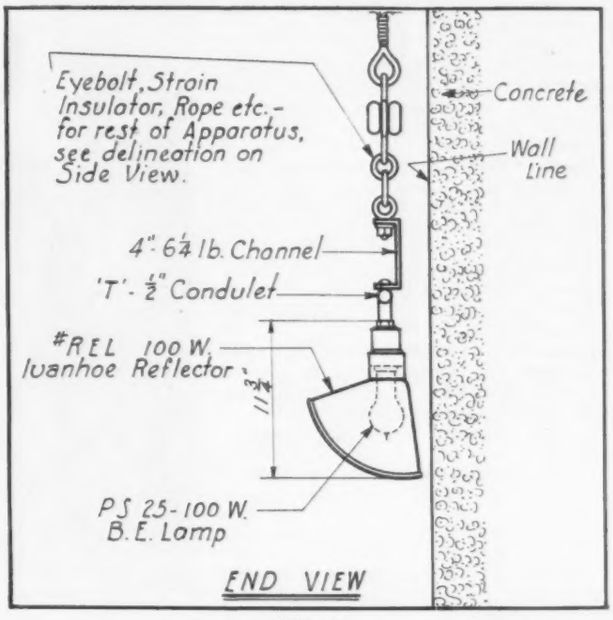

Eyebolt, Strain Insulator, Rope etc. - for rest of Apparatus, see delineation on Side View.
Concrete
Wall Line
4" - 6¼ lb. Channel
'T' - ½" Condulet
#R.E.L. 100 W. Ivanhoe Reflector
P.S. 25 - 100 W. B.E. Lamp
END VIEW

Fig. 5

Would Your Clerks Sell Appliances This Way?

One of the Editors of the Journal of Electricity Attempts to Purchase an Electric Ironer

EDITOR'S NOTE
The above is an actual experience of an editor of the Journal of Electricity. It is planned from time to time to relate other experiences of a similar nature.

Having decided to increase the use of electricity in his well electrified home by the addition of an electric ironing machine, one of the editors of the Journal of Electricity recently investigated the various machines on display by the dealers in San Francisco. After trying several of the electric stores only to be told, "We don't carry them," he finally went to the department stores. There, quite logically, he found ironers sold in the household goods department. In this department were also found very complete stocks of lamp socket devices, including irons, toasters, grills, heating pads, curling irons, immersion heaters and the well-known air heater.

Among other places visited was one of the leading department stores which prides itself on having clerks who are well informed, courteous and accommodating. The courtesy was there, beyond question, but just take the time to give serious thought to the following conversation:

One clerk, calling to another: "Mr. ———, these people want to see an electric ironer."

Second clerk: "We have the ——— and the ———, but you don't want the ———" (naming the first-mentioned machine).

Customer: "How about this machine," indicating the second named.

Clerk: "It's a good machine, has ball bearing casters, foot-control and is gas heated."

Customer: "What does it cost to run this machine?"

Clerk: "About three and a half cents an hour, I guess."

Pause——.

Clerk: "It can be cleaned easy because this lever here throws the shoe way back so it can be cleaned or waxed."

Pause——.

Clerk: "This machine costs $165 and I just sold one yesterday to a party in Berkeley. It's $172.50 on terms—we only charge five per cent."

Pause——.

Clerk: "It has a thermostat control so the shoe won't get too hot."

Customer: "The price includes the thermostat?"

Clerk: "Yes, it's built into the machine now and controls the gas."

Customer: "Is this machine furnished with electric heating device?"

Clerk: "Yes, but it's pretty expensive."

Customer: "How much will it cost to operate this machine if electrically heated?"

Clerk: "Oh, about eight or nine dollars a month."

Customer: "On how many hours a month of use is that figure based?"

Clerk: "Well, I can't tell you how much it will cost to run your machine—that would be foolish. But I'm telling you on about three hours' use a week."

Customer: "What is the rate for using this machine electrically equipped?"

Clerk: "Well, the power companies have a rate that is so much for so much and then drops down to so much for so much, then all over that I guess is three and a half cents."

Customer: "When this machine is electrically heated, what is the size of the heating equipment?"

Clerk: "Six hundred and sixty watts, the same as a **range.** It's $265 with electric heater. That makes it pretty expensive. It has a ——— motor so the electric equipment is the best you can get."

O Death! where is thy sting? O Grave! where is thy victory?

In a few short minutes of conversation was undone all the constructive work of the manufacturer of the ironer, all the tremendous effort of the central station to deliver to the consumer the message of low rates for domestic power service and all the merchandising structure of the department responsible for the sale of the ironer.

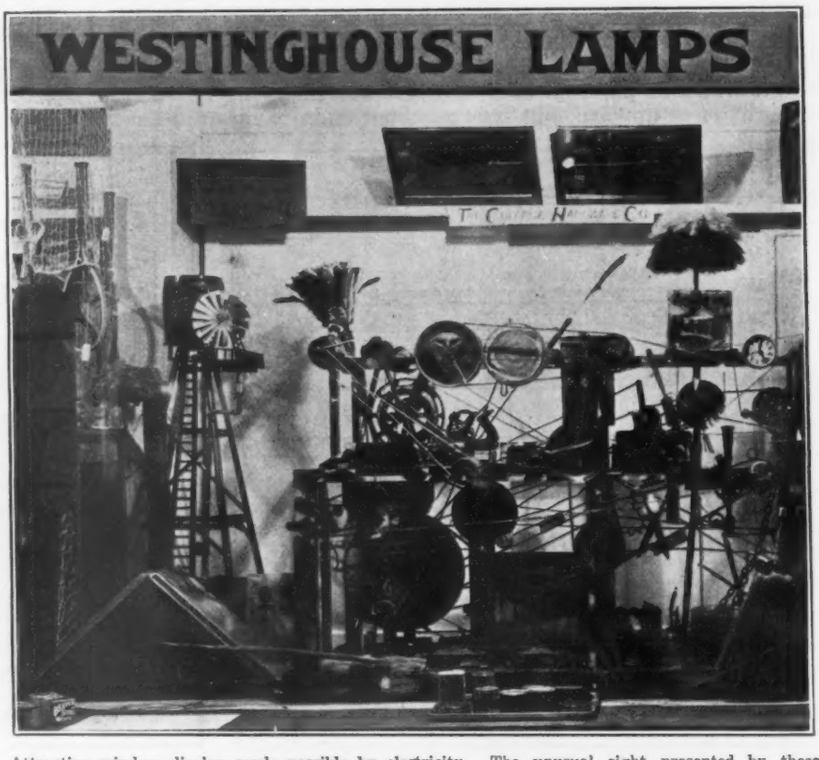
Some day the merchandise manager of that store is going to wonder why he is not selling electric appliances. We only hope he reads this personal experience and asks us to tell him why!

Unusual Window Display Proves Big Business Getter

Dealers everywhere are giving more thought to the importance of their windows. It is now fully realized that not only is the window space the most costly on the entire premises but it is also well known that attractively dressed windows are vital agents, first, for attracting the attention of passers-by and second, for drawing people into the store. Once inside the store it is up to the sales force to capitalize on the desire created by the window display. That window displays do create a desire to buy is so well proved by the experience of the department stores and dealers in all lines as to require no argument.

A splendid example of careful thought and planning in window display effort is shown in the photograph reproduced herewith. This display, which was supposed to represent King Tut's automobile, was in the window of the College Hardware Company, Berkeley, and was so effective that it was allowed to remain much longer than the usual trim. The entire set was made of hardware and household goods carried in stock in the store and all was in motion, the motive power being supplied by a small motor concealed from view. The effect was so unusual that it drew large crowds at all hours, day and night, and was productive of greatly increased sales.

A notable feature of this display is that it was made possible by the use of an electric motor. Dealers in electrical merchandise are particularly fortunate in that such material lends itself to exceptionally attractive window displays. Progressive dealers are capitalizing on this fact with successful results and increased profits.



Attractive window display made possible by electricity. The unusual sight presented by these articles in motion attracted attention which resulted in markedly increased sales.

E. B. McKinley, formerly of Paso Robles, Calif., has purchased the San Jose Electric Shop at San Jose. He took over the business on Sept. 1 and will proceed to develop the business according to several individual plans and ideas.

The consolidation of these two symbols standing for quality gives the purchaser an added guarantee of quality and safety and gives to the contractor-dealer an increased prestige.

Cooperative Sign Assures Electrical Dependability

Close Association of Two Symbols Standing for Quality Gives Promise of Best Workmanship and Materials

Campaigns for cooperative effort have long been planned and, to a degree, executed within the electrical industry. All such plans have resulted to the benefit and advantage of those concerned and have prompted further and more extensive cooperation. A leading electrical jobber of the Pacific Coast some time ago initiated a movement for the improvement of installation conditions and awarded to those contractor-dealers who agreed to cooperate in the movement for the betterment of conditions a conspicuous and distinctive mark or seal. This seal was placed only on merchandise which had been thoroughly tried and proved, and permission was given only to those who would agree to maintain the high installation standard set by the jobber.

The California State Association of Electrical Contractors and Dealers at the same time has been striving for better installation and working conditions and has made notable progress. Their seal of "Electrical Dependability" has become a watchword of quality work and is recognized as the symbol of reliability. Victor Le Moge, the president of the state association, has conceived the idea of combining the two symbols standing for the best in the industry and of presenting to the public a double assurance of protection in electrical installation work. This is certainly a splendid development of cooperative effort and is evidence of what can be accomplished within the industry by a unity of thought and action among the members of the trade.

Dealer Uses Novel Prize Contest to Stimulate Sales

Live dealers everywhere are constantly finding ways and means for bringing new customers into their stores and for increasing the customer interest in their business. Plans too numerous to mention here have been successfully worked out and the results have been written on the cash register. Such merchants never complain about poor business—they never have cause to complain because they never allow business to become poor. The merchant who is continually originating and initiating sales plans has no place in his mind for complaint. His mind is filled instead with constructive thoughts.

A conspicuous example of what can be done by the use of sales attraction features is the plan of the Electric Appliance & Service Company, 5101 York Blvd., Los Angeles. This firm recently offered a prize to the customer presenting the best letter setting forth the benefits received from the use of an electric appliance bought at their store. As not infrequently happens the prize went to a woman—Mrs. W. W. Smith—who wrote of the pleasure and service she had received from a washing machine she had purchased a short time previous. She says, among other things:

"I don't know what I would do without my washer. I used to dread wash days but now I take joy in running my machine at this time."

This letter is significant of several things. First, that electricity is performing a real sociological and economic service; second, that too much attention cannot be paid to the women of the country in formulating sales plans for electric appliances; third, that dealers who really want to do so always have at hand means for stimulating sales and for increasing the trend of traffic to their stores.

L. D. de Vis-Norton, of the Hawaiian Volcano Research Association, recently addressed the Engineers' Club at the club rooms, 57 Post St., San Francisco, on the topic "Observations of an Eperimenter at Kilauea." The suggestions was made during the meeting that the internal fires of the volcano could be utilized for the generation of energy.

J. C. Hobrecht, of Sacramento, Calif., was in attendance at the executive committee meeting of the California State Association of Electrical Contractors and Dealers. Mr. Hobrecht is never too busy to lend his time to constructive effort for the upbuilding of the entire industry and his notable vision is perhaps best expressed in his store which is an example to every dealer.

Harry H. Walker, one of the leading electrical contractors of Los Angeles and president of the Los Angeles Electrical Contractor-Dealers' Association, was a recent visitor to San Francisco. In addition to caring for personal business Mr. Walker also attended the executive committee meeting of the California Electrical Cooperative Campaign. Mr. Walker reports a very healthy business condition in the south and states that cooperative effort is rapidly expanding in that territory with the usual improvement in business conditions.

JOBBER, DEALER AND SALES AGENT

Modern Apartment Is to Have Electric Equipment

San Francisco's Largest Residence Building Will Be Extensive User of Electric Appliances and Apparatus

Electricity has long been recognized as the greatest labor-saving medium that can be introduced into the household. It shortens the necessary hours of toil and lightens the actual work; it improves living conditions, removes the drudgery of housework and permits the housewife to feel that she is a real member of society and not a servant. The extent of the growth of the idea of household electrification is much greater than is generally realized and this growth has been prompted by the demand from women for labor-saving devices. Women were among the first to recognize the value of electrical appliances and they have made possible the enormous sales volume which has been reached in those lines and which are continuing, not only without reduction but in ever increasing amount. The electric home is the logical outcome of this demand.

Architect's drawing of the Huntington Apartments which will be one of the most completely electrified apartments in San Francisco. One hundred and seven electric ranges will be installed.

Apartment house builders are providers of homes. Instead of housing one family they provide for several, sometimes for hundreds of families, and for that reason they must provide all the comforts that would be found in all the various individual homes of the people under their care. For this reason, and also because every apartment house is in competition with all other apartment houses in similar location, owners and builders are constantly striving to include in their equipment all electrical devices possible. Favorable rates for energy now offered by power companies together with the sales activity of those companies and of the dealers have resulted in some very notable and satisfactory appliance installations. Particularly is this true of electric range installations.

One of the most conspicuous apartment house installations on the Pacific Coast is that of the Huntington Apartments, San Francisco. The placing of electrical equipment in this building typifies the splendid cooperation so often shown in the industry and the sale is the result of the combined efforts of R. C. W. Libbey, of the Simplex Electric Heating Company; J. W. Wrenn, of the Great Western Power Company, and H. S. Tittle, electrical contractor-dealer.

The building, plans for which were prepared by Weeks & Day, San Francisco architects, is fireproof throughout and one of the most beautiful apartment houses yet erected in this section. It will be twelve stories high on California Street and fifteen stories on Pine Street with garage in the basement. Electricity plays a very important part in the operation of the entire building as the elevators will be electrically operated; each kitchen will be wired for an electric refrigerator; an electric suction fan on the roof will provide kitchen ventilation; motors will be installed for operation of vacuum cleaners, circulating hot water system and fire pump; three convenience outlets will be wired into each room; lighting fixtures will be specially designed for the purpose of diffusing all light from the center of the room and every kitchen will be equipped with a Simplex electric range. The cost of the building complete will be approximately $1,600,000 and it will be ready for occupancy within a few months.

The value of such an installation as this to the contractor-dealer hardly needs mention; suffice it to say that every progressive contractor will make it his business to further the interests of the industry by promoting the idea of domestic applications of electricity.

ELECTRIC RANGE DIRECTORY

Published and Copyrighted by the Journal of Electricity, September 15, 1923.

A list of Electric Range Manufacturers giving catalog information on the equipment of each with list of Western Distributing Agencies where repair parts may be secured. The publisher does not guarantee this information but to the best of his knowledge it is correct at the date of publication. When referring to this list in any way mention the **Journal of Electricity.**

Name of Manufacturer	Trade Name	Model or Catalog No.	Type of Unit O—Open C—Enclosed	Floor Area	Height from Floor	Oven Dimensions	HEATING UNITS — Dimensions — Surface: Large	Medium	Medium	Small	Simmerer	Oven	Broiler	HEATING UNITS — Wattage — Surface: Large	Medium	Medium	Small	Total Watts Surface Units	Oven	Broiler	Maximum Wattage	Temperature Control A—Thermostat C—Clock	Oven T—Elevated C—Cabinet L—Low	Retail Price	Western Sales Representative	Western Distributors	Nearest Point at Which Repair Parts May be Secured
Edison Elec. Appliance Co., Chicago, Ill.	"Hotpoint Hughes"	RS– 67	O	28½x52½	57	18x18x14	8¼	6½	6½	6½	...	2–12x12	...	1500	1000	...	1000	4500	2–1500	...	7500	AC	C	$235.50	**Edison Elec. Appl. Co.,** San Francisco, Los Angeles, Seattle, Portland and Ontario, Cal.		All sales offices
		R– 67					"	"																223.50			
		R– 79	O	28½x62¼	70	18x18x14	"	"				4–12x12		"	"			6500	4–1500		12500		C	210.00			
		R– 75	O	28½x52½	64	"	"	"				12x12	12x12	"	"		1000	4500	2–1500	1500	9000		C	325.00			
		R– 63	O	"	41	"	"	"				"	"	"	"			3500	1500	"	6500			247.00			
		R– 85	O	28½x28¼	33	"	"	"				"	"	"	"			3500	"	"	6500		L	174.00			
		R– 87	O	"	"	"	"	"				"	"	"	"		1000	4500	"	"	7500		L	161.50			
		R–101	O	25 x44	41	16x12x18	6½	"				"	"	1000	"			3000	1200	1200	5400		C	175.00			
		R–105	O	21½x24	33	16x12x15	"	"				9x12	9x12	"	"			2000	1100	1100	4200		L	99.00			
		R–109	O	21½x37¼	"	"	"	"				"	"	"	"			3000	"	"	5200		L	76.75			
																								84.25			
Electrahot Appliances, Incl., 301 Fifth Ave., South Minneapolis, Minn.	"Electrahot"	D– 57	...	25 x43½	...	15x15x19	...	...	...	...	...	.....	...	1000	1000	...	...	4000	1500	1500	7000	...	C	$135.00	**R. M. Burton** Alaska Bldg., Seattle		Seattle and San Francisco
Estate Stove Co., The Hamilton, Ohio	"Estate"	84	C	56 x28	58	18x18x12	8	...	...	6½	...	.....	16x18	1500	1100	1000	650	....	3300	1500	9650	...	E	.....	**The Estate Stove Co.,** Furniture Exchange, San Francisco		Factory
		88	"	56 x25	50	"	"	...	...	"	...	.....	"	"	"	...	"	....	.....	....	7800	...	E	.....			
		81	"	61 x28	55	"	"	...	...	"	...	.....	"	"	"	...	"	....	"	....	"	...	L	.....			
		79	"	54 x28	53	"	"	...	...	"	...	.....	"	"	"	...	"	....	"	....	"	...	L	.....			
		H– 83	"	29 x16	54	18x12x12	"	...	...	"	...	.....	12x18	"	"	...	"	....	2400	1000	5900	...	L	.....			
		80	"	39 x26	55	18x18x12	"	...	...	"	...	.....	16x18	"	"	...	"	....	2300	1500	7800	...	L	.....			
		82	"	23½x18	49	18x12x19	"	...	...	"	...	.....	12x18	"	"	...	"	....	2400	1000	4800	...	E	.....			
		78	"	28¾x18	43	12x11x17	"	...	...	"	...	"	"	"	"	...	"	....	1750	....	4250	...	E	.....			
Landers, Frary & Clark, New Britain, Conn.	"Universal"	E– 91	C	27 x43½	52	14x14x19	8¼	...	...	...	...	.....	.....	1500	1000	...	...	4500	2000	1500	8000	...	E	$200.00	**Landers, Frary & Clark,** 335 New Call Bldg., San Francisco	**Electric Appliance Co.,** San Francisco **The Elec. Corporation,** Los Angeles, Seattle and Portland **Fobes Supply Co.,** Seattle, Portland, Hardware Jobbers	Universal Service Stations San Francisco Los Angeles Seattle
		E– 92	"	"	58	"	"	...	...	"	...	.....	.....	"	"	...	...	"	"	"	"	...	"	215.00			
		E– 95	"	"	40	"	"	...	...	6¾	...	"	"	"	"	...	660	4160	"	"	7660	...	"	175.00			
		E– 96	"	"	51	"	"	...	...	"	...	.....	.....	"	"	...	"	"	"	"	8210	...	"	190.00			
		E– 93	"	"	40	"	"	...	...	"	...	.....	.....	"	"	...	...	3500	"	"	7000	...	"	165.00			
		E– 94	"	"	51	"	"	...	...	"	...	.....	.....	"	"	...	...	3500	"	"	7500	...	"	180.00			
		E– 90	"	27 x29	61	"	"	...	...	6½	...	.....	.....	"	"	...	"	4160	"	"	7660	...	"	150.00			
		E– 98	"	27 x23¾	38	"	"	...	...	"	...	.....	.....	"	"	...	"	3160	"	"	6660	...	L	150.00			
		E– 99	"	"	"	"	"	...	...	"	...	.....	.....	"	"	...	...	2500	"	"	6000	...	L	140.00			
Magee Furnace Co., Boston, Mass.	"Electri-Coal"	.....	C	43¾x26¼	33	16x12x13	9	7	...	...	...	.....	.....	1500	1000	...	...	3500	1500	1500	6500	...	E	$550.00	**The T. G. Arrowsmith Co.,** 135 New Montgomery St., San Francisco	**Dealers and Central Stations**	San Francisco
																								450.00			
	"Electric Alliance"	.....	C	.....	"	16x12x13	"	"	...	...	...	.....	.....	"	"	...	...	2500	"	"	5500	...	"	440.00			
																								350.00			
Majestic Electric Appliance Co., 590 Folsom St., San Francisco, Cal.	"Majestic"	1000	O	21½x47	48	18x18x14	8⅛	...	...	...	...	14x14	14x14	1500	....	.....	.....	4500	1300	1700	7500	...	E	$160.00	**Majestic Elec. Appl. Co.,** San Francisco, Kansas City, Mo.	**All Central Stations and Jobbers**	San Francisco and Kansas City
		1001	"	"	"	"	"	...	...	...	...	"	"	"	....	.....	.....	"	"	"	"	...	"	180.00			
		1002	"	"	"	"	"	...	...	...	...	"	"	"	....	.....	.....	"	"	"	"	...	"	200.00			
Geo. D. Roper Corp., Rockford, Ill.	"Roper"	2001	C	43 x26	32	16x16x13	8½	8½	...	...	...	12x16	12x 8	1800	1000	...	...	4800	1650	1100	7500	...	...	.....	**C. B. Babcock Co.,** 768 Mission St., San Francisco **W. W. Hall & Co.,** 217—15th St., Denver	**C. B. Babcock Co.,** San Francisco **P. B. Taylor,** Marsh Strong Bldg., Los Angeles	San Francisco
		2002	"	38 x26	30	"	"	"	...	...	...	"	"	"	"	...	...	2800	"	"	5500	...	...	.....			
		2003	"	31 x26	33	"	"	"	...	...	...	"	"	"	"	...	...	4800	"	"	7000	...	...	.....			
		2022	"	43 x26	29	"	"	"	...	...	...	"	"	"	"	...	...	4800	.....	.....	7000	...	...	.....			
		2005	"	17½x17½	22	.....	"	"	...	...	...	.....	.....	1600	1000	...	...	3600	.....	.....	3600	...	...	.....			
		2009	"	28 x17	"	.....	"	"	...	...	...	.....	.....	"	"	...	...	2600	.....	....	2600	...	...	.....			
		2012	"	40 x17	"	.....	"	"	...	...	...	.....	.....	"	"	...	...	1600	.....	.....	1600	...	...	.....			
Rutenber Elec. Co., Inc., Marion, Ind.	"Marion"	D– 90	O	22 x36	...	12x12x12	8	...	...	5½	...	7x 7	...	1400	....	...	660	2060	1320	....	3380	A	E	$ 75.00	**Atlantic-Pacific Sales Co.,** 646 Mission St., San Francisco	**Through Leading Jobbers**	San Francisco
		126	"	18 x24	34	18x14x14	"	...	...	"	...	9x11	...	"	1200	...	"	3260	2380	....	5640	"	L	98.50			
		135	"	22 x50	55	"	"	...	...	"	...	"	...	"	"	...	"	3800	"	....	6180	"	E	160.00			
		130	"	27 x51	"	18x14x16	"	...	...	"	...	"	...	"	"	...	"	"	2500	....	6300	"	"	170.00			
		145	"	"	62	"	"	...	...	"	...	"	...	"	"	...	"	5000	"	....	7500	"	"	180.00			
		150	"	27 x52	73	"	"	...	...	"	...	9x11	...	"	"	...	"	"	"	2300	9800	"	"	207.00			
		147	"	27 x63	67	"	"	...	...	"	...	"	...	"	"	...	"	7600	"	....	12600	"	"	227.00			
		110	"	20 x26	38	18x14x14	"	...	...	"	...	"	...	"	"	...	"	3800	2380	....	6180	"	L	140.00			
		105	"	24 x26	"	18x14x16	"	...	...	"	...	"	...	"	"	...	"	5000	2500	....	7500	"	"	155.00			
Simplex Elec. Heating Co., 85 Sidney St., Cambridge 39, Mass.	"Simplex"	25	C	30 x22	32	18x17x11	8	...	...	...	...	15x16	10x18	1200	.....	.....	.....	3600	1200	2000	6800	...	L	$150.00	**R. C. W. Libbey,** Main Office, Box 793, San Francisco	**Universal Elec. Co.,** San Francisco **Holbrook, Merrill & Stetson,** San Francisco **Reiman Whle. Elec. Co.,** Los Angeles **Marshall Wells Co.,** Portland	Distributors
		26	"	34 x15	26	13x13x13	"	...	...	...	...	10x11	12x13	1200	.....	.....	.....	2400	600	1200	4200	...	E	75.00			
		27	"	51 x22	54	18x17x11	"	...	...	...	...	15x16	10x18	1200	.....	.....	.....	3600	1200	2000	6800	...	"	175.00			
		29	"	57 x22	"	"	"	...	...	...	...	"	"	1200	.....	.....	.....	4800	1900	"	8700	...	"	220.00			

Name of Manufacturer	Trade Name	Model or Catalog No.	Type of Unit O—Open C—Enclosed	Floor Area	Height from Floor	Oven Dimensions	HEATING UNITS — Dimensions — Surface: Large	Medium	Medium	Small	Simmerer	Oven	Broiler	Wattage — Surface: Large	Medium	Medium	Small	Total Watts Surface Units	Oven	Broiler	TO'L Maximum Wattage	Temperature Control A—Thermostat C—Clock	Oven E—Elevated C—Cabinet L—Low	Retail Price	Western Sales Representative	Western Distributors	Nearest Point at Which Repair Parts May be Secured
Standard Electric Stove Co., Toledo, Ohio	"Standard"	D–619	C or O	24 x58	61	11x14x19															8500	A	E		**Commercial Associates,** Los Angeles, San Francisco		
		619	O	24 x57	"	"															6700	"	"				
		621	C	"	"	"															7700	"	"				
		501	O	24 x26	"	"															5260	"	"				
		755	C	26 x47	"	"															9500	"	"				
		639	O	24 x40	"	"															8000	"	"				
		555	C	24 x38	53	"															5600	"	L				
		655	O	24 x50	61	"															8000	A	"				
		455	C	24 x34	53	"															4600	"	L				
		423–4	O	24 x33	61	"															5600	"	E				
		521	C	22 x30	49	"															5600	"	L				
		519	O	20 x29	61	"															5600	"	E				
		421	C	18 x26	49	11x14x16															5000	"	L				
		851	O	27 x40	61	11x14x19															5000	"	"				
		850	C	27 x46	53	"															5600	"	"				
		365	O	22 x33	22	11x12x14															3200	"	"				
		A– 4	C	None		11x14x10															4000	"	E				
		A– 5	O	"		11x14x19															5000	"	"				
		951	C	24 x22	52	14x16x18															7600	"	"				
H. G. Weeks Mfg. Co., The Hamilton, Ohio	"Weeks"	52	O	23 x16	35	16x10x 9		7				9x12	9x12		440			880	1100	1100	3080		L	$ 71 75	**T. G. Arrowsmith Co.,** 135 New Montgomery St., San Francisco	**Central Stations and Dealers**	San Francisco
		44	C	24 x17	38	18x14x12	9	"				"	"	1200	"			2400	1200	1200	4800		"	105 00			
		46	O	"	"	"	"	"				"	"	"				"	"	"	"		"	93 00			
		236	C	"	"	16x14x11	"	"															"	75 00			
		S– 64	O	26 x20	"	18x18x12	"	7							600			3000	1500	1500	6000		"	159 00			
		C–114	C	44 x24	33	16x18x12	"	"				14x14	14x14	"	"			"	"	"	"		E	186 00			
		105	O	39 x24	38	18x18x12	"	"				"	"	"	"			"	"	"	"		"	217 00			
		C–354	C	47 x22	33	18x18x15	"	"				"	"	"	"			"	"	"	"		"	210 00			
		454	O	"	"	"	"	"				"	"	"	"			3600	"	"	6600		"	222 00			
Walker & Pratt Mfg. Co., Boston, Mass.	"Crawford"	18–70	O	26 x49½	32	18x17x13	10	8				7½x12	7½x12	2000	1500		1000	5000	2000	2000	7000		E	$195 00	**B. Y. Gibson,** 680 Folsom St., San Francisco	**Western Elec. Co.,** San Francisco, Los Angeles, Oakland, Portland, Seattle, Tacoma, Spokane, Denver, and Salt Lake City	Distributors
		18–70	C	"	"	"	8½	7				"	"	1500	"		"	"	"	"	7000		"	219 00			
		18–60	O	26 x28½	"	"	8	"				"	"	"	"		"	"	2500	1500	7500		L	170 00			
		18–60	C	"	"	"	8½	7				"	"	"	"		"	"	"	"	7500		"	194 00			
		18–50	O	16½x28½	"	18x12x13	8	"				"	"	"	"		"	2500	2000	1000	4500		"	135 00			
		18–50	C	"	"	"	8½	7				"	"	"	"		"	"	"	"	4500		"	147 00			
		16–80	O	23 x41	32	16x17x14	8	"				"	"	"	"		"	3500	1500	1500	6500		E	122 00			
		16–80	C	"	"	"	8½	7				"	"	"	"		"	"	"	"	6500		"	140 00			
Westinghouse Elec. & Mfg. Co., San Francisco, Cal.	"Westinghouse"	B–3–19	O	43 x25	59	18x13x16	10	8				14x 8	14x8	2000	1000			4000	1500	1500	8000	A-C	E-L	$220 00	**Westinghouse Elec. & Mfg. Co.,** San Francisco, Seattle Los Angeles and Portland	**Fobes Supply Co.,** San Francisco, Oakland Seattle and Portland **Illinois Elec. Co.,** Los Angeles.	Distributors
		B–2–19	"	32 x24½	34	"	10	8				"	"	"	"			"	"	"	7000	A	L	150 00			
		515	"	24½x16½	31	12x16x12		8						1500				3000	1000	1000	5000	A	L	60 00			

NOTE--In compiling this series of Directories, the Journal of Electricity has made an effort to secure the desired information from all manufacturers of the types of equipment listed that is sold in the West. The Publisher will be glad to receive omissions, changes and additions for publication in the big FALL BUYING NUMBER of October 15, 1923.

Seattle Electric Club Presents Message to City

Dealers Cooperate in Sponsoring Electric Home and Appliance Show which Attracted Thousands of Visitors

By C. A. OSIER

The Electric Club of Seattle, which has a total membership of 160 men representing all branches of the electrical industry in Seattle, last year opened for public inspection two electric homes, each equipped with a full line of electrical devices and appliances. It was a new departure in that section of the country in demonstrating the value of electrical improvements. Non-commercial in every sense of the word, the homes gave the public an opportunity to see how electricity could make a home perfect in comfort, convenience and beauty.

Justifying the expenditure of money and time of the individual members of the Electric Club, the people of Seattle and adjacent cities and towns flocked to see the homes. So keen was the interest manifested that special traffic officers were required to direct the throngs in the vicinity of the home, and many could not gain admittance. It was unanimously conceded at the conclusion of the show that the novelty of seeing the appliances in their proper setting proved of far more educational value than a showroom display. The homes taught the public that viewed them that electricity can work magic in living conditions.

From Aug. 25 to Sept. 8 inclusive, this year, the Electric Club of Seattle again gave the general public an opportunity to visit a model electric home, on this occasion but one home being utilized. However, to further enhance the benefits accruing from the electric home demonstration, a large exhibition tent was maintained adjoining the home in which domestic appliances and equipment were displayed and demonstrated. Visitors to the home were invited to first view the exposition tent, there to view the appliances, then enter the electric home to see them installed and operated under ideal conditions.

This year's electric home and exposition was a dealer show. It was conducted by them and for them, for the obvious purpose of advertising the electrical industry, introducing and demonstrating all tried and proven domestic appliances, and for the further purpose of selling the idea of convenience outlets.

On the first three days of the exhibition and exposition, the daily average attendance totaled 2,200. From then on, continuing up to the last day of the public opening, the attendance reached the 3,000 mark daily, this number on two or more days being exceeded by 1,000 or more. Unofficial figures placed the total number of visitors at 45,000.

The electric home was designed and built by Gardner J. Gwinn, Inc., and was furnished by the Standard Furniture Company of Seattle, the firms who built and equipped the home last year. The home, one of the most attractive in the northern portion of the city, is located on a newly opened arterial highway leading from Seattle to Everett and towns in the western Washington territory.

On Sunday, Aug. 19, a week prior to the opening of the home and show, a traffic check was made on the highway fronting the electric home, and it was found that 12,600 cars passed the house between the hours of 6 a.m. and 10 p.m. This check gave the Electric Club members definite assurance that the home would be visited by a goodly number of people.

During the 14-day exposition period, traffic officers slowed down cars both going toward and leaving the home, making it impossible for people to get by without seeing the home and exposition tent. In addition, the tent and home were floodlighted and the highway for two miles extending into the city was lighted with amber lights. Street intersections were plainly marked with signs directing the way to the electric home.

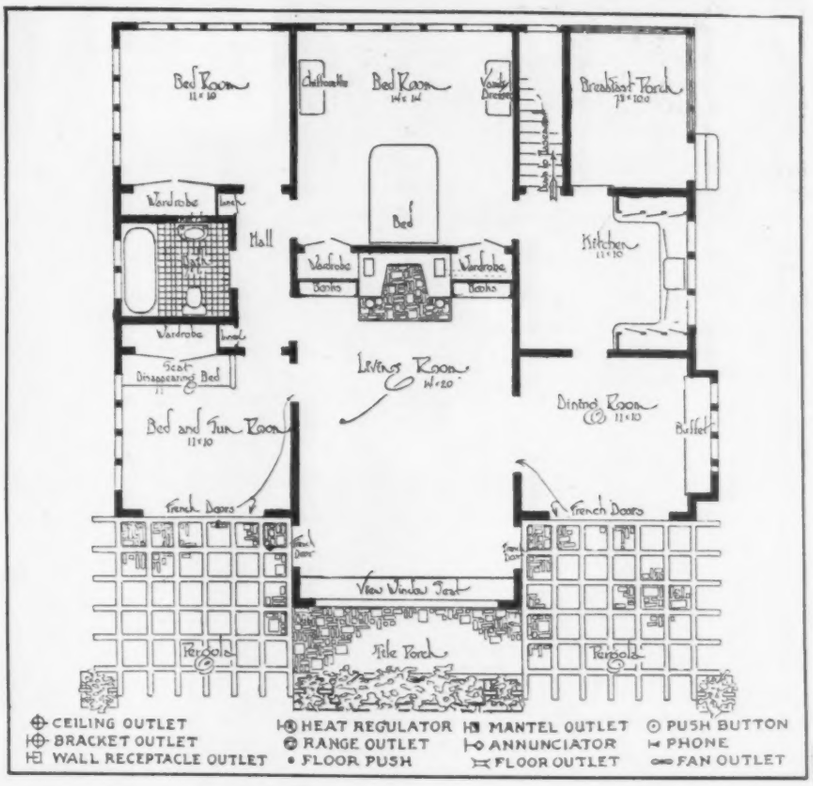
The home, which incorporated the latest innovations in house building, is of the Spanish or Southern type, with enough American ideas to distinguish it from the earlier dwellings from which the motif was obtained. The walls are of tinted stucco, with red tile roof, the cornice of which breaks through the side walls in pleasing effect. The floor plan is ideally worked out, covering seven well-lighted and ventilated rooms all on one floor. Hardwood floors, delicately tinted walls and ivory woodwork provide a pleasing background for the exquisite lighting fixtures, which were selected from the latest designs. The wiring installation in the electric home was made by the Arrow Electric Company of Seattle.

The exposition of electrical appliances adjacent to the model home was one of the most novel shows ever held in Seattle. Housed in a tent 50 x 100 ft. in size, were thirty exhibition booths ranged around the walls and down the center. These booths were sold to Seattle electrical dealers for -47.50 apiece, the fees received covering only the cost of renting the tent, erecting and maintaining it, constructing booths, and miscellaneous expenses. Water, light and current for operating the appliances were furnished free, and all signs were furnished by the Electric Club.

Indicating how reasonably a show or exposition of this magnitude can be produced, electrical men point out that in this case the home was built and furnished without cost to the club, Gardner J. Gwinn, Inc., and the Standard Furniture Company taking their pay in whatever advertising would result. The current for light and power in the tent show was furnished free by the Puget Sound Power & Light Company, while the municipal light plant of Seattle supplied the same service for the electric home.

All work in connection with the show was done by the volunteer members of the Electric Club and no dearth of efficient, willing workers existed. The only expense of the show was in advertising it, printing, insurance and watchmen's services. Money to cover these items was raised by an assessment among member firms and members of the Electric Club, and no difficulty whatever was experienced in raising a sum adequate to cover all costs.

All domestic appliances demonstrated in the electric home were furnished by Seattle manufacturers and jobbers, who drew lots for the privilege of sup-



Women who competed in the contest held by the Seattle Post-Intelligencer were asked to show on this floor plan where they would install outlets and appliances to make the home a modern one.

THE electric home presented to the citizens of Seattle by the Electric Club of that city was completely equipped with electrical appliances and labor saving devices. The exterior and three of the rooms are shown.

The seven men shown above were largely responsible for the success of the electric home and appliance show conducted by the Electric Club of Seattle. Reading from left to right the men are: (top row) W. E. Jones, president of the club; W. M. Meacham, chairman of the executive committee of the display; S. R. Hepler, wiring committee; (bottom row) L. R. Grant, chairman publicity committee; J. R. Wells, chairman appliance committee; H. J. Martin, finance committee; and J. J. Agutter, show committee.

plying the respective articles. The appliances in the tent show were the property of the dealers who conducted the booths.

No soliciting was permitted or attempted either in the tent show or in the home, as all efforts were directed toward giving a practical demonstration and explanation of the various appliances that were exhibited. The public's attention in the exposition tent was directed to the various appliances showing their operation. In the home, attendants stationed in the various rooms directed attention to the convenience outlets, the lighting fixtures and the arrangement of appliances.

One of the special features presented during the exhibition was the baking of waffles, cakes and the roasting of meats by electricity before the eyes of the visitors. Walter E. Jones, president of the Electric Club, assisted by a group of electrical men, baked the waffles on Westinghouse and Universal waffle irons. The City Light Department of Seattle and the Puget Sound Power & Light Company were in charge of the electric ranges being demonstrated. Visitors were given every opportunity to see the ranges in operation and to ask questions of the demonstrators.

To increase the interest in the home and appliance show, two of the Seattle daily papers conducted contests for the best ideas on the proper electrification of a modern home. The contests were open to all women of the Pacific Northwest and a large number of women sent in answers to the problems presented.

The rules of the contest conducted by the Seattle Times, provided that a contestant should write not over 250 words on the subject of how to eliminate household drudgery by means of electrical appliances. In the announcement of the contest it was stated that women could obtain excellent ideas for using electrical appliances by visiting the electric home and appliance show and also by going to any electrical dealer's establishment. It was also suggested that newspaper and magazine advertisements offered sources from which ideas could be obtained. First prize in this contest was a Western Electric washing machine and smaller electrical appliances were given to the fourteen other prize winners. All of the appliances were secured from local electrical dealers.

A floor plan of a modern home was reproduced in the Seattle Post-Intelligencer and the women of the Northwest who entered the contest were told to indicate on the plan where they would install the various outlets and appliances if they were designing a modern home. Symbols for the various outlets were illustrated and the contestants were supposed to use these in laying out the electrical equipment of the house. The builder, a man from the electrical industry in Seattle, and a woman determined the winners in the contest and awarded the first prize, an automatic Westinghouse electric range, to the winner. Ten other prizes ranging from an electric vacuum cleaner to an electric curling iron were given to the ten next best plans. Thousands of housewives of Seattle and the neighboring towns took advantage of the opportunity to win one of the electric appliances offered in the two contests and reports indicate that the idea was productive of much good.

To give the feminine touch to the electric home, a hostess committee was appointed by W. M. Meacham, chairman of the executive committee of the display. This hostess committee was headed by Mrs. Victor Zednick. A group of women whose husbands are interested in the electrical industry assisted Mrs. Zednick in welcoming the visitors to the electric home.

Eight committees were appointed by W. E. Jones, president of the Electric Club of Seattle, to handle the electric home and appliance show and it was largely due to the efforts of these men that the affair was made such a success. The personnel of the committees was as follows:

Executive committee—W. M. Meacham, chairman; J. R. Wells, V. E. McCain, S. R. Russell, R. G. Reiniger, Harry Byrne, J. D. Ross, L. R. Grant, C. H. Birkel. Wiring Committee—C. H. Birkel, chairman; S. R. Hepler, W. E. Jones. House Committee—Harry Byrne, chairman; W. E. Jones, Fred Lushington. Appliance Committee—J. R. Wells, chairman; V. E. McCain, R. G. Reiniger. Finance Committee—J. J. Hayes, chairman; H. J. Martin, C. D. Russell. Lighting Committee—H. E. Gleason, chairman; H. D. Wyatt, Walter Funfsinn. Publicity Committee—L. R. Grant, chairman; Anna M. Brueggerhoff. Show Committee—J. J. Agutter, chairman; A. E. Williams, John Hector, Fred Lushington, H. E. Boring, Thomas Phelps, Frank Cooley.

Appliance Load Is Increased By Percolator Sales Campaign

E. B. Hall, commercial manager of the Western Light & Power Company, Denver, Colo., has recently instituted at all offices of that company a special percolator sales campaign. F. S. Henderson, local manager of the company at Boulder, during the month of August sold nearly 300 pot type percolators on the special plan as mapped out, which provided for installment payments and an allowance of one dollar on each old percolator or coffee pot turned in.

For the special campaign an aluminum percolator was chosen, selling for $7.50 list, and a down payment of fifty cents was required on all sales while the balance was payable with the light bill at the rate of fifty cents a month. This extended the full payment period over an entire year and the popularity of the plan is best attested by the results obtained. The same plan is now being employed at Fort Collins, Colo., and Cheyenne, Wyo.

Fig. 1—The reflections in the glass practically blotted out the upper part of the figure when the display window was lighted by natural light alone. The camera was placed to get the reflections of the buildings and skyline.

Fig. 2—The conditions are the same as in Fig. 1, with the exception that two spotlights have been focused on the figure. Note how the figure stands out despite the reflections in the balance of the display window.

Floodlights Overcome Daylight Window Reflections

High Power Spotlights Focused on Objects in Window Display Solve Problem for Cleveland, Ohio, Merchant

Every member of the electrical industry from the smallest contractor-dealer to the largest manufacturer of lighting equipment and the central station manager, is interested in the development of the commercial lighting business for the reason that the installation of proper lighting equipment in stores adds considerably to the profits of the entire industry.

Just as the well lighted show window will stop more pedestrians at night so will the show window that is lighted to overcome daylight reflections stop more people during the day time according to figures presented by Ward Harrison and H. T. Spaulding in a paper entitled, "Overcoming Daylight Reflections in Show Windows" which was presented at the same meeting of the society. The results of the check were made in Cleveland, Ohio, on a window that was particularly subjected to daylight reflections.

The two engineers, working in conjunction with the manager of the store, determined that natural light which had been admitted to the window by means of a skylight, was insufficient to overcome the reflections that were present in the window. Working on the principle that plate glass is under certain conditions an excellent mirror, the engineers endeavored to solve the problem of removing this mirror-like effect of the show windows. They observed that when objects either on or across the street are well lighted by natural illumination, and when the background of the window is dark, the strength of the reflections is often so great that they will eliminate portions of the display.

Attempts have been made to overcome this difficulty by using curved glass, but extensive use has not been made of this scheme. This is due largely to the fact that the base of the glass must be set in the window about a foot and a half or two feet from the ordinary front line of the window. The display thus receives less natural light and in addition the sense of distance is added to the display.

In the installation made in the Cleveland store, the engineers worked on the theory that reflections could be overcome if sufficient intensity of light could be utilized in the interior of the window. The effort was made to make the brightness of the objects in the window greater than that of the reflected objects. Many people have tried to gain this effect by turning on the regular show window lighting units, but the intensity has not been great enough and the results have not been satisfactory.

According to Mr. Harrison and Mr. Spaulding, objects in bright sunlight are illuminated to about 5,000 foot-candles and their reflections in the windows appear to have about one-tenth this intensity, thus an intensity of 50 or even 100 foot-candles within the window would be of little advantage. Illumination of 1,000 or even 2,000 foot-candles would be more of the character that is required. Fig. 1 shows the effect that reflections have upon the value of the show window display.

The first attempts to remove the reflections from the windows of the Cleveland store were made with a spot light which produced about 25 foot-candles, directed toward the principal articles in the windows. It was found that the intensity was not sufficient but the idea of concentrating the light on the objects was determined to be correct. The illuminating engineers were then called into conference and upon their recommendation six floodlights of about 25,000 cp. each were installed. Fig. 2 shows the same window as Fig. 1, but lighted with two floodlights focused upon the figure.

Time	Persons Stopping Lights On	Lights Off
10:15—11:00		45
11:00—11:45	93	
11:45—12:30		87
12:30— 1:15	119	
2:00— 2:30		42
2:30— 3:00	47	
Total,	259	174

Table I—Number of persons stopping to observe display with special lighting off and on.

The window was so arranged that it was impossible to install the floodlights either behind or above the regular lighting units so it was necessary to take advantage of the fact that the window had a false ceiling which had a small hole in it covered by a panel of leaded glass. The panel was removed and new panels were designed to fit the opening. Behind these panels the projectors were mounted in such a way that the interior glass reflector can be tipped at any angle. A rotating circular frame is attached to each reflector so that the horizontal direction of the beam can be changed. The main panel is fitted with diffusing glass and the circle below is of fluted glass so as to eliminate stri-

Fig. 3—Method of installing the special reflectors in the Cleveland store. One of the frames is lowered to show how lamps may be reached for cleaning purposes and for renewing.

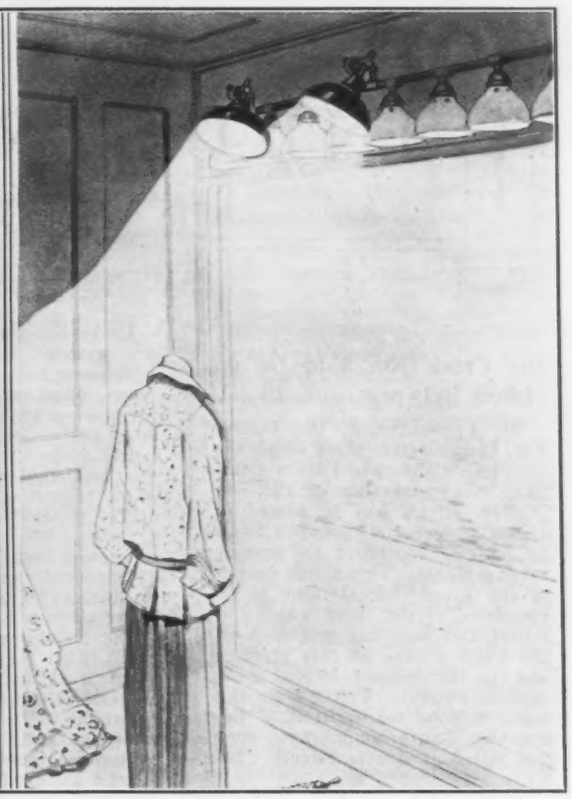


Fig. 4—The installation suggested by this illustration is adaptable to most show windows in that sufficient space for mounting reflectors is available between top of glass and ceiling.

ations and to give a slight vertical spread to the beam. The panel is hinged so that the projectors may be cleaned. A view of the interior of the window, showing one of the frames dropped for cleaning, is shown in Fig. 3.

Length of Window Along Street	Number of Principal Objects Likely to be Used	Number of 500-Watt Projector Units
4 to 8	1	2
9 to 16	2	4
17 to 24	3	6
25 to 32	4	8

Table II—Number and size of projectors required for typical show windows.

The installation made in the Cleveland store is regarded as a special one as in most cases it will be possible for the electrical contractor to install the projectors between the upper edge of the plate glass and the ceiling. It is more desirable to have the projectors mounted toward the front of the window for in that way the light will strike the front of the object more than when the reflectors are placed nearly above the object. A suggested installation of reflectors in windows which have the ceiling above the top of the glass, is shown in Fig. 4. The correct number and size of projectors for various windows is given in Table II.

The Pacific Coast electrical contractor-dealer can do well to stimulate the installation of proper show window lighting equipment for he will find that every merchant is anxious to increase the value of his window displays. A moderately large store in Massachusetts recently spent in the neighborhood of $40,000 in changing the background of its display windows from a painted wood to Circassian walnut. If the modern merchant will spend that sum in changing the background of his windows, will he not spend a considerable sum to install correct lighting units to keep in step with other improvements?

DO YOU REPRESENT OR MISREPRESENT THE INDUSTRY?

By JOE OSIER

It is not my intention to preach to the boys in the electrical business, because—

Most of them, I am sure, know their stuff and are strutting it—still—

There are a few (and at them I aim my slings and arrows) who think that "getting by" means getting ahead and these few are as wrong as the corner store bandit who—

Sells sand for sugar.

The corner store Jesse James soon finds himself on the sidewalk with his goods and chattels beside him and his creditors are paging The Law'r and—

To my way of thinking, this same treatment should be accorded men of the electrical industry who—

Confuse business practices with malpractices.

If every man engaged in the game would assume that he is the only one in his community;—

If he would figure that the growth and success of the industry depended upon his own individual efforts;—

If he would concede that the people in his town judged the electrical industry by their dealings with him—

The game, today, would be on a firmer foundation—would be riding at anchor in a much safer harbor.

It has been truthfully said: "You are the representative of the electrical business in your community." Therefore, admitting this to be true, it is up to you to see that the industry is fairly represented.

And, in order to fairly represent the industry, a firm must be fair in all its dealings; it must perform conscientious work at a reasonable rate; it must furnish quality goods and service par excellence and—

Do everything possible to prosper the business and keep customers satisfied.

This can be done and is being done daily by thousands of firms throughout this great commonwealth, else—

The boys who worry about overhead and payrolls and wampum in the wallet would have been placed on casualty lists long before this.

And so I say: "Getting by" does not, by any manner or means. assure progress and the shopowner who figures that it does is piling up a deficit which years of hard work cannot liquidate. The "get byer" does not represent the industry, in spite of the fact that some folks may think he does.

He is a fraud—a false alarm—a bum check and the sooner he is pushed out of the picture, the better it will be for the real business men who are willing and eager to—

Exchange material and labor for kale or its equivalent.

Therefore, in all truth and sincerity, I say to the Men of the Industry:—

Either represent the industry or get out of the game—run or pull out of the race.

INDUSTRIAL NEWS

Big Creek No. 3 to Go on Lines Between Sept. 20-25

Big Creek No. 3, the 75,000-kva. hydroelectric plant which the Southern California Edison Company is constructing on the San Joaquin River, will be placed in operation some time between Sept. 20 and 25 according to present arrangements. This is the fourth of the generating stations to be completed of the chain which the Edison Company has projected on the head waters of this stream, and is the largest hydro plant west of Keokuk. Power from the plant will be transmitted to the southern California markets over 240 miles of double circuit, 220-kv. line.

The initial installation will consist of three Wellman-Seaver-Morgan 35,000-hp. 423 r.p.m. vertical turbines operating under a head of 760 ft. These will drive three Westinghouse 25,000-kva., 11,000-volt, 50-cycle generators. Future plans call for the installation of three additional units, giving the plant an ultimate capacity of 150,000 kva.

Tentative Washington Water and Power Act Is Framed

A tentative draft of an initiative measure which provides for the formation of public utility districts in the state of Washington giving these districts sweeping powers, has been prepared and is to be sent to interested bodies in the state. The bill is being sponsored by the Public Ownership League of Seattle and embraces a public ownership program of far-reaching character. The movement was started by Oliver T. Erickson, Seattle councilman and one of the leaders of the public ownership group of that city.

Through the creation of public utility districts machinery is provided for the public ownership and operation of light, power, irrigation, water supply and drainage projects, and in addition, telephone systems. The bill was originally drafted by Thomas J. L. Kennedy, corporation counsel, and was revised by a group of Seattle lawyers. The bill follows the plan under which the province of Ontario, Canada, is operating its publicly owned systems, but in the place of a commission with supervisory powers covering the entire province, the proposal is to divide the authority among local improvement district commissions.

Under the proposed bill, broad powers are granted to the utility districts which are authorized to construct, condemn, purchase, operate, develop and regulate water projects and natural sites pertaining to the hydroelectric power industry, and also provides for the municipal operation of steam or other plants. The size of the public utility districts is not limited and the governing body is to be an elected commission sitting for a period of six years. This commission is to be headed by a president who is to be assisted by four commissioners.

The formation of the utility districts is provided for by stating that these districts can be formed on the initiative of certain numbers of voters, varying from 500 to 100 depending on the size of the county. If the majority of the voters approve of the forming of the district the proposition carries and the district becomes "a municipal corporation of the State of Washington, within the powers prescribed in this act."

In giving the authority for the formation of the public utility districts the tentative draft of the bill gives these districts the authority to (1) conduct a survey of the natural resources of the district; (2) plan a development of these resources, preparing an order for the development of various projects; (3) construct, condemn or purchase and operate light, power, irrigation, water supply, drainage and telephone projects; (4) purchase electric power from municipalities and to sell light, water or power to public or private firms or individuals; (5) issue bonds, general or utility, or borrow money; (6) levy an annual tax on all taxable property not exceeding two mills.

The Public Ownership League has mapped out a course to follow in the placing of the bill before the people of Washington. The tentative draft will first be sent to labor councils, farmers' leagues, civic and commercial bodies and other organizations in order to secure their approval if possible. Petitions for the submission of the bill to popular vote will be circulated early next year. As only 40,000 signatures are needed to get the bill placed on the 1924 ballot, the matter will probably come before the voters a year from this November. A majority vote in favor of the initiative measure would automatically make a law of the bill.

Grant, Smith & Company, Seattle, Wash., will build the proposed Hotel Olympic, the community hotel to cost $3,500,000, under an arrangement for a fixed contractor's fee of $125,000. The company's bid was low at $3,254,000, but additions have been made to the plans which will increase the cost of the building to about $3,500,000.

Work on Alouette-Stave Project to Be Started in 1924

John Davidson, deputy chairman of the British Columbia Electric Railway Company, London, England, and a director of the British Empire Trust Company, was a visitor to British Columbia during August, making an inspection of the company's property in Vancouver and Victoria. Optimistic as to the future of the company's operations, he announced that between $5,000,000 and $10,000,000 would be expended on the system during the next few years.

Mr. Davidson also announced that work would be begun on the Alouette-Stave power development at the beginning of 1924, by which time the approval of the company's plans by the provincial government was expected to be obtained. The initial work will consist of building a dam at the mouth of Alouette Lake, raising the level of the lake 45 ft. and driving a 4,000-ft. tunnel 15 ft. in diameter between Alouette and Stave Lakes. At the mouth of this tunnel, taking advantage of the 140-ft. head between the lakes, a 9,000-kw. power house will be built. This plant will operate at an 80 per cent load factor.

Contemporaneously, work is expected to be started on the fifth unit adjacent to the present Stave Falls plant. This will generate 24,000 hp. at a lower load factor. Later work will be begun on the third plant three and a half miles below, which will generate 80,000 hp. These plans are in the hands of E. E. Carpenter, the company's consulting engineer.

Owing to the company's contract to supply the Britannia Mining and Smelting Company with 6,000 hp. which will begin on completion of the high tension line early in November, and other big contracts which are in anticipation, the load of the company is increasing rapidly and the new units are expected to be required as soon as they can be installed.

On Vancouver Island, proposals are being made for building a high tension line from Victoria to Nanaimo, a distance of 60 miles, to supply several cities and the adjacent coal mines with hydroelectric power from the British Columbia Electric Railway Company's Jordan River plant. Several cities operate their own steam generating stations and if the scheme goes through, they will save considerably by buying power in bulk from the central station company.

The fall meeting of the Electric Power Club will be held at the French Lick Springs Hotel, French Lick, Ind., Nov. 19-22, 1923.

San Francisco Adopts Municipal Ownership Plan

Supervisors Vote City Distribution of Power from 70,000-kw. Moccasin Creek Plant on Hetch Hetchy Project

Unequivocal recognition of municipal ownership and distribution of the power to be developed at the 70,000-kw. Moccasin Creek plant of the Hetch Hetchy project was contained in a resolution passed by the Board of Supervisors of San Francisco at a meeting Sept. 11, 1923. The complete resolution follows:

"Whereas, The City and County of San Francisco faces a crisis in relation to the Hetch Hetchy water and power project, in which $40,000,000 of the taxpayers' money has already been invested; therefore be it

"Resolved, That this Board of Supervisors is unalterably and unequivocally opposed to the policy of entering into any contract, lease or agreement of any kind or character for the distribution of Hetch Hetchy power to or through any private corporation; and be it further

"Resolved, That this Board of Supercisors hereby declares absolute municipal ownership and direct distribution to consumers of Hetch Hetchy electrical power by the municipality to be the basic policy of the City and County of San Francisco, and that it is the decision of this board that every needed step be taken to put such policy into effect without delay; and be it further

"Resolved, That the negotiations for purchase by the city, and within the city limits, of a distribution system from an existing private corporation, and preferably the Pacific Gas & Electric Company, be placed in the hands of an advisory committee of five citizens to be appointed by the Mayor, and that said advisory committee be instructed to proceed at once and to report within thirty days its progress and recommendations to this board; and be it further

"Resolved, That the city engineer is hereby directed to accomplish the completion of the Moccasin Creek power house and of a transmission system to a point within the city limits of San Francisco, without delay; and be it further

"Resolved, That the city engineer is hereby directed to proceed forthwith with the preparation of plans and specifications for a complete municipal distribution system capable of supplying the city, the householders and the industries of San Francisco with electric light and energy."

An interesting feature of the meeting was the presentation of a report by City Engineer M. M. O'Shaughnessy in which he recommends that the city eventually go into the power business, either by the condemnation of the existing distribution systems of the Pacific Gas & Electric Company and the Great Western Power Company or by the construction of an independent system.

City Engineer O'Shaughnessy in his report stated that proposals had been received from both of the utilities operating in San Francisco to act as the city's agents in distributing the power at a figure which will return the city from $2,000,000 to $2,150,000 annually. This is a 5 per cent return on a capital investment of $40,000,000, or slightly less than the city has spent on the project to date.

The city engineer also pointed out the inadequacy of the power supply which might be developed in conjunction with the Hetch Hetchy project, stating that the Moccasin Creek plant can supply but 45 per cent of the city's needs at the present time. He gave the capacity of the Moccasin Creek plant as 70,000 kw. which might be increased to 105,000 kw. with the installation of an additional unit. With the development of the North Mountain and Early Intake projects at a later date, the total installed capacity can be brought up to 173,000 kw.

The city to date has spent $45,000,000 on the Hetch Hetchy development and is faced with the necessity of voting additional millions to complete the project. City Engineer O'Shaughnessy estimates the additional funds needed as follows:

To complete Hetch Hetchy project	$ 32,000,000
To buy Spring Valley system	38,000,000
To build Early Intake and North Mountain power units	18,000,000
Probable cost of distribution system	45,000,000
Annual extensions and additions at cost of $2,000,000 a year for 20 years	40,000,000
Total	$173,000,000

With the total power possibilities of the project only 45 per cent of the present consumption, more millions must be spent to purchase additional power, and still more money to take care of increased population and power consumption.

The decision of the supervisors to embark upon a program of municipal ownership comes as the culmination of several months of agitation by the two Hearst newspapers in San Francisco.

The editorial on page 198 of this issue was written and had gone to press previous to the time that action was taken by the Board of Supervisors.

Dr. Steinmetz Addresses Three Thousand Denver People

Over 3,000 people listened to Dr. Charles P. Steinmetz, chief consulting engineer of the General Electric Company and internationally famed electrical and mathematical genius, at the Denver, Colo., municipal auditorium, Sept. 4, at a meeting held under the joint auspices of the Rocky Mountain division of the National Electric Light Association and the Colorado chapter of the American Institute of Electrical Engineers.

The subject of Dr. Steinmetz' lecture was "The Electric Power Industry" and a special amplification system was installed in the auditorium for the occasion. In the absence of H. D. Randall, Denver manager of the General Electric Company, Clare N. Stannard, vice-president and general manager of the Public Service Company of Colorado, served as chairman.

One hundred and fifty southern California newspaper editors were the guests of the Southern California Edison Company on a three-day tour of the Big Creek San Joaquin developments of that utility recently. The inspection trip was organized on the eve of the bringing-in of No. 3 Power House. The party returned to Los Angeles Sept. 11.

Construction Work on Idaho Tie Line Started on Sept. 9

Surveys have been completed and construction crews began work Sept. 9, on the proposed connection in the vicinity of Wallace, Idaho, between the power systems of the Washington Water Company and the Montana Power Company. This connection will permit the sale of as high as 20,000 hp. of current by one company to the other and establish a through power connection from eastern Montana to Puget Sound over the lines of the Montana Power Company, the Washington Water Power Company and the Puget Sound Power & Light Company.

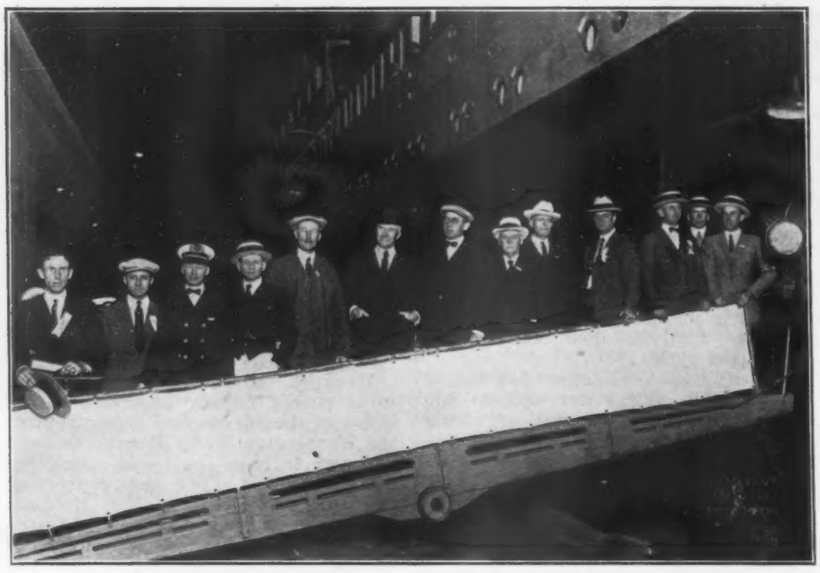
Work on the connection is expected to be pushed rapidly under the supervision of the engineering department of the Washington Water Power Company in order to have the tie-up completed during the fall. The new connecting link will extend from the Montana Power Company's station east of Burke for a distance of seven miles to the Mullan Junction substation of the Washington Water Power Company, a few miles east of Wallace. Switches and a bank of transformers capable of handling 20,000 hp. will be installed at Mullan Junction.

Street Railway Employees Wages Subject of Conference

A conciliation board, granted by the Dominion Government at the request of the British Columbia Electric Railway Company and its employees, who are demanding an increase of 10 per cent in their wages, is sitting in Vancouver, B. C. W. G. Murrin, president of the company, appeared before the board on Aug. 30, and stated that a decrease in the wages would be more equitable than an increase at the present time. The existing working conditions, he averred, were exceedingly onerous, and should be modified in favor of the company.

The present wages and working conditions were adjusted by a conciliation board in November, 1922, which found that the company was entitled to a reduction of 15 per cent in the wages then in force, but recommended that a reduction of only 10 per cent be made at that time and a further reduction of 5 per cent at a later period. The cost of living in Vancouver, Mr. Murrin stated, is lower now than at that time. Furthermore, his company, he stated, is paying a higher rate of wages than any other Canadian company operating a street railway in Canada.

The Pacific Gas & Electric Company has applied to the California Railroad Commission for approval of an agreement with the Columbia Steel Corporation and an agreement with the Calaveras Copper Company, under which the central station company will furnish power for industrial purposes for a period of five years. The contract with the steel company calls for supplying electric energy at its plant at Pittsburg, Calif., with an initial installation of 5,400 hp. which is to be increased later to 12,000 hp. The other contract is for supplying electricity at the Calaveras Copper Company's plant at Copperopolis, under a guaranteed revenue of $31,320 per year during the life of the contract.



Members of the Electric Club of Los Angeles boarding the Ruth Alexander preparatory to making the trip to San Diego. Reading from left to right the men are: J. E. McDonald, secretary Joint Pole Committee and chairman of the entertainment committee of the trip; R. B. Schutten, district passenger agent, Pacific Steamship Company; J. G. Loomer, Western Electric Company and captain and general chairman of the trip; William A. Knost, executive secretary of the Electric Club of Los Angeles and purser of the trip; Percy Booth, Pacific Coast manager, Edison Electric Appliance Company; Geo. B. Anderson, manager of transportation, Los Angeles Railway Company; Russell H. Ballard, vice-president and general manager, Southern California Edison Company; A. B. Cass, president, Southern California Telephone Company; Ben G. Wright, manager, Southern California Telephone Company; D. C. Casselman, secretary-manager, Builder's Exchange of Los Angeles and chairman of the dance committee; Richard E. Smith, advertising agent, Southern California Edison Company and president of the Electric Club; David T. Prenter, formerly of the Southern California Telephone Company and chairman of the publicity committee; J. H. Jamison, manager merchandising division, Westinghouse Electric & Manufacturing Company and chairman of ticket sales.

Electric Club of Los Angeles Takes First Outing

Two Hundred Members and Their Families Travel to San Diego by Boat and Are Entertained by Local Club

Over two hundred members of the Electric Club of Los Angeles and their wives and families embarked on the steamship Ruth Alexander of the Pacific Steamship Company on Aug. 24 to make the trip to San Diego, Calif. The trip constituted the first annual outing of that organization and lasted three days, the return to Los Angeles being made on Aug. 26.

The trip started from the Pacific Electric Railway station where special trains were provided to take the party to the vessel which lay at San Pedro. The ship was boarded about 9 o'clock on Friday night and the journey started immediately. Going down a dance was held aboard ship and a midnight supper was served. Entertainment was furnished by the Southland Trio, who were guests of the Electric Club. One of the features of the trip down was the forming of the Calcutta pool for the golf tournament which was held in San Diego on Saturday morning. This aroused quite a bit of interest among the contestants and among those who bid for the various players.

The golf tournament was held on the Country Club links on Saturday morning under the auspices of the San Diego Electric Club. The tournament was won by K. E. Van Kuran of the Westinghouse Electric & Manufacturing Company of Los Angeles, while John M. Morris of the same company finished second. E. L. Bowler and W. L. Frost, both of the Southern California Edison Company, tied for third place.

On arrival in San Diego on Saturday morning, a committee of the San Diego Electric Club, under the direction of F. R. Smalley and P. P. Pine, boarded the ship and greeted the members of the visiting club and presented each of the visiting ladies with a bouquet of flowers. At 9:30 a.m. the party disembarked and were treated to an automobile trip as guests of the San Diego Electric Club to Point Loma, Marine Barracks, Naval Base and Fort Rosencrans. A picnic luncheon was served at noon on Point Loma by the San Diego Electric Club, after which the motor trip was resumed, and ended in Balboa Park.

After a brief rest, a baseball game between two teams composed of members of the Los Angeles and San Diego electric clubs, captained by K. E. Van Kuran and J. O. Case of the Los Angeles Electric Club, was held. The game ended with the victory going to Mr. Van Kuran's team with a score of 99 to 98.

After the baseball game, field sports were held for the ladies and gentlemen present, the results being as follows: Needle and thread race: won by Mr. and Mrs. F. R. Smalley of the San Diego Electric Club. Ladies' 40-yard dash: won by Mrs. F. R. Smalley of the San Diego Electric Club. Fat Men's race: tie for first place by Arthur L. Spring of the Los Angeles Electric Club and "Doc" A. E. Holloway of the San Diego Electric Club. Old Men's race (contestants over sixty years of age): won by J. A. McDonald of the Joint Pole Committee, while second place went to E. R. Northmore of the Los Angeles Gas & Electric Corporation. As contestants were limited to men over sixty years and as both McDonald and Northmore are well under that age and had to be assisted over the finishing line so as to assure their victory, they were both fined a considerable amount. Gentlemen's 40-yard dash (contestants over 35 years of age): won by Glen E. Arbogast of the Newbery Electric Corporation, Los Angeles. Gentlemen's 50-yard dash for men under 35: won by William A. Knost of the Los Angeles Electric Club. Boys' shoe race: won by George Walker. Girls' 25-yard dash: tie for first place among the four contestants, Miss Wanda Arbogast, Miss Juanita Arbogast, Miss Phyllis Smith and Miss Catherine Pine. Suitable prizes were awarded for all events and contestants were limited to members of the San Diego and Los Angeles electric clubs and their families.

After the field sports, dinner was served at the Balboa Park club house, under the auspices of the San Diego Electric Club. Then short talks were made by J. F. Zweiner, president of the San Diego Electric Club, Richard E. Smith, president of the Los Angeles Electric Club, and Russell H. Ballard, vice-president and general manager of the Southern California Edison Company, who, in a few brief remarks expressed the gratitude of the Electric Club of Los Angeles. The speakers also extended an invitation to the San Diego Electric Club to make a similar visit to Los Angeles.

J. F. (Jess) Zweiner, president of the San Diego Electric Club, was the leader of the club that entertained the Electric Club of Los Angeles that was headed by Richard E. (Dick) Smith, the president of that organization.

After dinner special trains and automobiles took the party back to the ship where departure was taken amidst the noise made by K. E. Van Kuran, Percy Booth, Dick Northmore, Glen Arbogast, Harry Walker, Joe Case and other prominent members of the Electric Club of Los Angeles, who tried to outdo the noisy singing of the promi-

nent members of the Electric Club of San Diego, among them being "Jess" Zweiner, Walt Wurfel, B. Biewiner, "Doc" Holloway, Frank Smalley, Charlie Weiss and others of that group.

The grand prize drawings were held aboard the ship, the first prize being won by Miss Cass, daughter of A. B. Cass, president of the Southern California Telephone Company; the second prize by Louis Grime of the Western Electric Company; and third prize by Mrs. Elda B. Davis, wife of the Los Angeles manager of the Westinghouse Lamp Company.

The party disembarked at Los Angeles Harbor on Sunday morning and were taken to Los Angeles by special electric trains. Reports indicate that everyone regretted to leave, as the party was one of the best ever given by the electrical industry and was well attended by all branches of the industry.

Yosemite Power Company Secures Tuolumne River Permit

The Federal Power Commission has recently given a permit to the Yosemite Power Company, of San Francisco, granting rights for the development of hydroelectric power on the South and Middle Forks of the Tuolumne River, near Groveland, Calif. The notification of the granting of the permit was sent to Sanderson & Porter, San Francisco engineers for the power company.

The Yosemite Power Company has long been the owner of the water rights of the Golden Rock Ditch, one of the oldest in California, built originally for mining purposes, and also most of the lands within its two reservoir locations. The Federal permit and license granting the power company the use of government lands for reservoirs and conduits removes the last obstacle in the way of construction.

The company's project includes the construction of two large reservoirs for equalizing the flow of these streams in order to deliver the maximum continuous flow of water for power generation, and two large power plants, one using the water under a head of 630 ft., and the second using the same water under a head of over 1,900 ft. These plants are particularly noteworthy because of the extremely advantageous natural conditions, both for the construction of reservoirs and the high head under which the stored water may be utilized. The total installed capacity of these plants will be more than 30,000 kw.

Port of Portland May Fabricate Diesel-Electric Dredge

Plans are now being considered by the Port of Portland Commission for the construction of the most powerful dredge in the world. According to J. H. Polhemus, the general manager, the dredge will be of the Diesel-electric type, the power to be furnished by four 750-hp. Diesel engines. Two of these engines are already owned by the Port of Portland, having been purchased several months ago from the United States Shipping Board.

The dredge will have a pipe line of 30 in., the same size as the three dredges now in operation, but in power and efficiency it will far surpass the old type. This dredge is needed as the Port of Portland has several years of work in sight for the three old dredges if they are constantly operated.

Correct Illumination Subject of Rotary Club Address

H. T. Plumb, engineer of the General Electric Company, with headquarters at Salt Lake City, Utah., was the principal speaker at the weekly luncheon of the Logan Rotary Club on Aug. 23.

Mr. Plumb gave an address on the value of proper illumination in preventing eye strain, and emphasized the fact that a great deal of the suffering endured by people today can be attributed to improper care of the eyes. He explained, in an interesting manner, some of the proper methods of correct illumination.

Airplane Delivers Mail to Men at Sales Conference

Morning papers and important mail were delivered by airplane to the 200 members of the General Electric sales conference which gathered at Camp Lovejoy, Association Island, Lake Ontario, Sept. 4-8. The flight was made from Schenectady on Sept. 5.

This is the first time the General Electric Company has used an airplane as a special dispatch carrier, or for transportation of any nature, and it is the first time a landing of this kind has been made on Association Island. Parade grounds there form an ideal landing place for the machine. The airline distance from Schenectady is 132 miles, which was covered in about two hours, a saving of five hours over the time required for railroad transportation.

First to greet the pilot was Frank H. Gale, advertising manager of the General Electric Company, who acted as camp manager. Upon receipt of the pouch he made immediate delivery of the letters and papers, the first recipient being President Gerard Swope, followed by the vice-presidents and others. Everyone received mail and there were newspapers for all who wanted them.

Preliminary arrangements for the flight were not divulged and first news of the trip reached the conference when one of the campers noticed the airplane circling at a height of about 1,000 ft. above the island.

Budgets Approved by N.E.L.A. Executive Committee

Budgets for geographic divisions and national activities were discussed and approved at a meeting of the National Executive Committee of the National Electric Light Association at the organization headquarters, Aug. 31. Details of the program for the present administrative year were outlined and the program unanimously adopted at this meeting and at a meeting of the Public Relations National Section Executive Committee, held at the headquarters of the organization, Aug. 30.

One of the most important features of the program will be a national service survey such as was proposed at the June convention in New York City. This survey will be conducted along lines to be determined by a committee which will work out several optional plans.

Walter H. Johnson, president of the Association, announced that he had appointed all committee chairmen and that all committees were actively at work. He requested and received approval of his appointments of committee chairmen for the association year.

Appliance Demonstration Held by Department Store

The Emporium, one of San Francisco's leading department stores, instituted a new merchandising effort starting Sept. 11. It was planned to have a demonstration in its auditorium of electrical devices for home use, this display to include lamp socket appliances, washers, dish washers, ranges, etc. The appliances were in actual operation and the practical application of electricity to domestic use was well exhibited.

Motion pictures were provided showing the generation and distribution of energy and a course of lectures was presented by the home service representative of one of the local power companies. The entire plan was constructive in design as it was intended to demonstrate practically the advantages of electrical appliances in actual housekeeping.

M. C. Fitzgerald, traffic manager of the General Electric Company, handing the mail pouch to the pilot of the airplane courier which flew from Schenectady to Association Island.

Editors' banquet in front of club house at Drum Power House.

H. B. Cooper, manager of Drum division, and P. M. Downing, vice-president in charge of electrical construction and operation, watching editors go down tramway at Drum Power House.

Editors Visit Spaulding-Drum Power Development

Pacific Gas & Electric Company Conducts Inspection Tour for 150 Editors from Territory which It Serves

Continuing the policy inaugurated by its public relations department last year, the Pacific Gas & Electric Company conducted a party of more than 150 editors and special writers of central and northern California newspapers on a two-day inspection trip over its Spaulding-Drum hydroelectric development in the Sierra Nevada Mountains, Aug. 24-26.

O. W. Peterson, engineer of general construction, and Frank A. Leach, vice-president and general manager, on editors' trip.

The party left San Francisco Friday, Aug. 24, on a twelve-car special train arriving at Summit, Cal., the following morning. Following breakfast on the diners, the entire party was placed in automobiles for a trip to Lake Van Norden and Lake Spaulding. Forty-five machines made up the caravan. In each, in addition to the driver, was an official of the company who explained the various points of interest to the passengers as the caravan proceeded through the mountains.

Lake Spaulding was reached shortly before noon. Here the party was served with an elaborate lunch under an arbor which had been constructed along the crest of the dam. Following the luncheon, Frank A. Leach, vice-president and general manager of the company, R. E. Fisher, vice-president in charge of public relations and sales, and P. M. Downing, vice-president in charge of electrical construction and operation, addressed the gathering from a boat anchored in the lake. Members of the party inspected the points of interest about the dam including the two small hydroelectric plants located there and were then taken by machine to Lookout Point where an excellent view of Lake Spaulding, the dam and the Bear River Valley was obtained.

The next stop en route was at Drum Power House, where a program of entertainment had been arranged Here the party enjoyed a banquet which was served on an outdoor platform in front of the club house. P. M. Downing described the Spaulding-Drum development in detail for the benefit of the visitors and explained the operations of his company in all of its various phases.

After a ride up the incline the party was taken to Colfax where it was again met by the special train. Saturday night was spent on the train. Following breakfast on Sunday, the guests of the company were taken by automobile through the Sutter County fruit belt, water for the irrigation of which is furnished by the Pacific Gas & Electric Company. Wise and Halsey power houses were also visited.

Luncheon Sunday was enjoyed at Crystal Springs Park, near Auburn. Following the meal, the party returned by automobile to San Francisco and the various other cities which the editors represented.

The trip was highly successful, no detail having been left undone for the convenience, comfort and entertainment of the company's guests. The entire party, including officials of the company, consisted of approximately 220. The trip was under the direct supervision of Mr. Fisher and Mr. Downing, while the arrangements were under the direction of H. M. Cooper, manager of the Drum division.

Colorado Survey Party Reaches Bright Angel Trail

The party of government surveyors and explorers, which left Lee's Ferry, near the Utah-Colorado line, in specially constructed boats Aug. 1, arrived at the foot of Bright Angel trail in the Grand Canyon of the Colorado River Sept. 1 after a thrilling journey. The party is charting a section of the river never before accurately surveyed.

Colonel C. H. Birdseye, commanding the expedition, stated that the dangers encountered have been less formidable than the party had been led to expect from the reports of earlier explorers. The most important result of the survey so far, Colonel Birdseye said, is the determination of the length of Marble Canyon. The party places the length as 5 miles less than that fixed by the Powell survey.

The party has again resumed its journey through a dangerous section of the canyon, the surveys of which will have an important bearing on flood control and power development on the river. The surveyors are traveling nine days ahead of schedule, and do not expect to get into communication with the outside world again for six weeks.

Pacific Gas & Electric Company Active on South Yuba

Work is progressing rapidly on the Pacific Gas & Electric Company's extensive development of the South Yuba water system. The road from Cisco, Calif., into Lake Fordyce is about completed. Lumber for the construction of forms for the pouring of concrete is being cut locally and towed across the lake on barges. The Fordyce dam is the parent reservoir of the old Yuba Water Company's system which was built in 1873 and rebuilt in 1881. It is at the head of a cluster of lakes that feed the Bear Valley watershed and is a landmark of power development in California.

The new construction will raise the dam 47 ft. and will more than double the storage capacity. This reservoir supplies water to the two Drum power houses, the Halsey and Wise power houses, and after this it is used for irrigating Placer County orchards. This development program will cost in the neighborhood of one million five hundred thousand dollars.

In order to use the additional water made available by the enlargement of Lake Fordyce, a second penstock or pipe line will be installed in the Drum power house, involving an expenditure of $298,400. An afterbay or settling basin will be constructed below the Drum power house to regulate the flow and in order to carry on this work a road will be built from Dutch Flat to the Drum power house, utilizing the old miners' ditch grade for the purpose. A forebay at the Halsey power house, increasing the capacity there from 95 acre-feet to 310 acre-feet, will be constructed by raising the earth dam.

In order to handle the additional water made available by the development, the Drum Canal will be enlarged at a cost of $113,000. The work is being carried on under the direction of Jim Martin, who has long been identified with the South Yuba power development. As the lake is somewhat difficult of access and the outdoor season in the Sierra region is short, it is estimated that it will take at least two years to complete the work.

Bureau of Utility Information Is Formed in Oregon

To give the people of Oregon accurate information concerning the public utilities operating in that state, the leading public utilities have formed a committee which is to be known as the Oregon Public Utility Information Bureau. Seven of the largest operating companies in the state will be identified with the bureau from the start. An effort will be made to inform the people of Oregon of the services given them by the companies and also of the problems that the companies have to meet.

Negotiations prior to the organization of the bureau have been going on for several months and it was only recently that the personnel of the committee to head the bureau was announced. Franklin T. Griffith, president of the Portland Railway, Light & Power Company, is chairman of the committee, the other members being: John A. Lang, vice-president, Pacific Power & Light Company, secretary-treasurer of the committee; C. M. Brewer, vice-president and general manager of the Mountain States Power Company, Albany; J. P. Lottridge, vice-president and general manager, Eastern Oregon Light & Power Company, Baker; Paul B. McKee, vice-president and general manager, The California Oregon Power Company, Medford; Guy W. Talbot, president, Portland Gas & Coke Company; and L. T. Merwin, vice-president and general manager, Northwestern Electric Company. W. P. Strandborg, for the last eight years in charge of the publicity and advertising departments of the Portland Railway, Light & Power Company, has been selected to be director of the newly formed bureau.

The companies represented in the bureau are: Portland Railway, Light & Power Company, Portland Gas & Coke Company, Pacific Power & Light Company, Northwestern Electric Company, Mountain States Power Company, Eastern Oregon Light & Power Company and The California Oregon Power Company.

Progress Being Made on Mystic Lake Power Development

Work is progressing on the Mystic Lake hydroelectric development of the Montana Power Company in southeastern Montana. A 20-ft. dam will be built and the lake tapped 40 ft. below the surface. A combination tunnel and pipe line will convey the water to two 6,250-kva. units under a head of 1,150 ft. A wood stave pipe line 54 in. in diameter and 9,000 ft. long will connect with a steel penstock 3,000 ft. in length. The penstock and pipe line will be protected with a Johnson surge chamber.

Twenty miles of road have been finished and contracts have been let to finish the wood stave pipe line and penstock this fall. Most of the power house, generator and water wheel equipment has been contracted for and it is expected to have the plant completed by the middle of 1924. All material and equipment is hauled by auto truck from the nearest railroad, a distance of 45 miles. A 55,000-volt transmission line 27 miles in length will tie the plant in with an existing line at Red Lodge, Mont.

Steam Turbine Being Installed at Baker City, Ore.

Installation of the big steam turbine which will generate electric current for the consumers of the Eastern Oregon Light & Power Company of Baker City, Ore., has started at the present steam plant location in South Baker. D. T. Rutledge of San Francisco, turbine engineer of the General Electric Company, is in charge of the work.

Remodeling of the old steam turbine foundations is now under way. The turbine weighs 24 tons, and the new equipment when installed will operate continuously, having a generating capacity of 1,000 kw. The boilers will produce superheated steam, 125 deg. above normal steam temperature.

One of the special features to be presented at the Iron and Steel Exposition at the Broadway Auditorium, New York, is a completely electrified foundry. This foundry will be in actual operation and will be producing finished castings. This is the first time that an effort has been made to present, at an exposition, actual foundry practice on such a large and comprehensive scale.

Industries Exposition to Have Palace of Electricity

A special section, to be known as the Palace of Electricity, covering an area of 8,000 sq. ft., is to be reserved for the electrical industry at the California Industries Exposition to be held in the San Francisco Civic Auditorium Nov. 17 to Dec. 2. This announcement was made by Clyde Chamblin, chairman of the committee appointed by the San Francisco Electrical Development League to cooperate with the management of the exposition.

The entire floor space of the Polk Street hall of the Auditorium will be occupied by the booths of the electrical industry. This is the only location in which electrical exhibits will be permitted. Each of the booths will be approximately 10 x 10 ft. and the League committee intends to arrange for a lighting scheme and decorative idea which will be typical of the electrical industry.

The electrical displays are to be grouped in this manner in order to impress the public with the importance of the industry. The coming exposition is the third one that has been conducted in San Francisco.

Federal Power Commission Names New Representative

Ralf R. Woolley, hydraulic engineer of the United States Geological Survey, will represent the Federal Power Commission in the development of the Flaming Gorge site on the Green River by the Utah Power & Light Company. Mr. Woolley is considered one of the best informed men on the water power possibilities of Utah, and he surveyed the Flaming Gorge district for his department last year. It is because of his intimate acquaintance with the problems presented that the Federal Power Commission influenced the Geological Survey to loan them his services for the supervisory work.

Under the preliminary permit granted the Utah Power & Light Company, it has three years in which to make preliminary surveys and experiments to determine the feasibility of constructing the dam.

A total of 407 household articles, representing approximately $20,000 in revenue, were sold by twenty-two district agents of The Washington Water Power Company during August, according to reports from that company. Every article was sold in country territory. The appliances sold include 60 electric ranges, 18 electric washing machines, 55 water heaters, 169 irons and various other articles. J. F. Farquhar, in charge of the outside territory, reported that business has been exceptionally good and that the company expects to double last year's sales in the country districts.

Newspaper reports from Phoenix, Ariz., state that another interstate Colorado River conference is to be held in Washington, D. C., Sept. 24. Governor Hunt of Arizona has appointed a committee of nine, the majority of which is said to be against the Colorado River Compact, to attend the conference where the membership of the Federal Power Commission and representatives of the other interested states will be in attendance.

Meetings

Public Memorial Meeting Held for John A. Britton

A public memorial meeting for the late John A. Britton, who at the time of his death was vice-president and general manager of the Pacific Gas & Electric Company, was held in the San Francisco Civic Auditorium on Sept. 6. The meeting was iniated by the Lincoln Grammar School Association and was participated in by the officials and membership of many of the San Francisco clubs, the San Francisco Red Cross and Boy Scouts organizations.

The San Francisco Electrical Development League was among the leaders in sponsoring the meeting of tribute to the Pacific Gas & Electric Company executive. The total attendance numbered about three thousand. The ceremony was presided over by Frank C. Drew, president of the Lincoln Grammar School Association, who characterized the life work of Mr. Britton. Mayor James Rolph, Jr., Lucius L. Solomons, vice-president of the Lincoln Grammar School Association, and Charles H. Sutton of the legal department of the Pacific Gas & Electric Company were among the other speakers.

Sacramento Selected for Meeting of State Association

The next quarterly meeting of the California State Association of Electrical Contractors and Dealers will be held at Sacramento on Oct. 13, 1923. Special arrangements have been made by J. W. Redpath, secretary, for the chartering of the steamer Navajo to transport the members from the San Francisco Bay territory. This steamer will leave the Southern Pacific wharf, pier 5, at six o'clock p.m. on Friday evening, Oct. 12, and will return Sunday morning. The fare, including transportation, berth and all meals for the entire round trip will be $12. The midnight lunches, which were so popular on the previous steamer trip, will be a feature of the occasion and it is expected that there will be a large number of attendants from all branches of the industry.

COMING EVENTS

Convention of Electric Clubs—
Annual Convention—Association Island, N. Y.
Sept. 16-19, 1923

Rocky Mountain Division — National Electric Light Association—
Annual Convention—Glenwood Springs, Colo.
Sept. 17-19, 1923

Colorado Public Service Association—
Annual Convention—Glenwood Springs, Colo.
Sept. 17-19, 1923

American Institute of Electrical Engineers—
Pacific Coast Convention—Del Monte, Calif.
Oct. 2-5, 1923

Association of Electragists International—
Annual Convention—Washington, D. C.
Oct. 9-12, 1923

George H. Stickney, manager of the commercial engineering department of the Edison Lamp Works of the General Electric Company, will be the principal speaker at a meeting to be held in Denver, Colo., Sept. 20, under the auspices of the Electrical Cooperative League of that city. As a preliminary to the lighting campaigns contemplated by the League the meeting has been arranged for the entire electrical industry of the city. It will be held in the assembly room of the Denver Gas & Electric Light Company. A special invitation to be present has been extended to out-of-town electrical men.

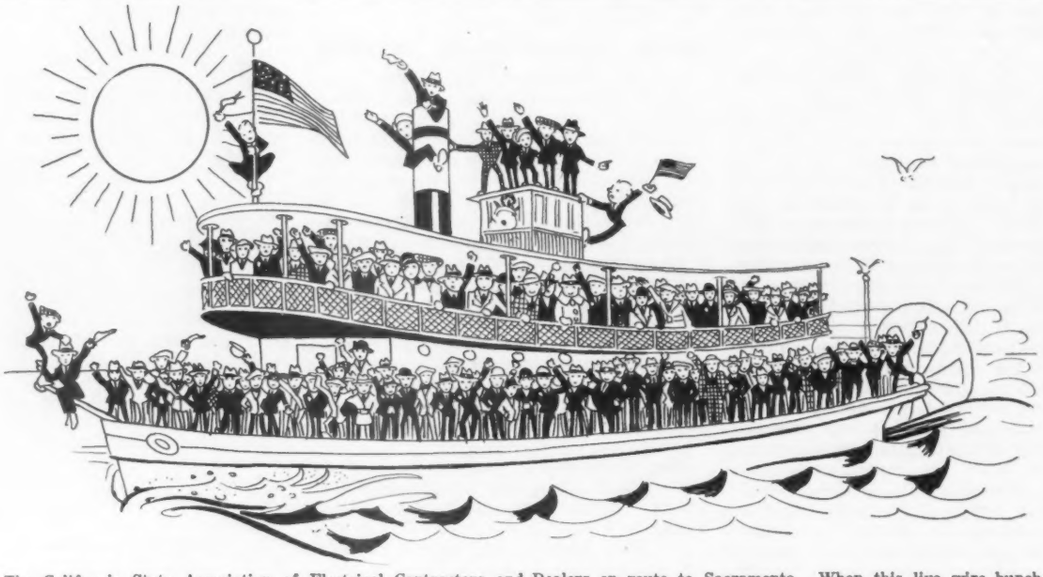
Speaker Claims that Engineers Make Good Business Men

Engineers are finding their way into every business, and because of their technical training they are well qualified to become successful business men and executives, according to Bayard W. Mendenhall, who delivered an address before the All-Engineers Club of Salt Lake City, Utah, at the weekly luncheon on Aug. 27.

The engineer, the speaker pointed out, has an , advantage in salesmanship, which is the foundation of practically all businesses, because training in engineering develops many of the qualifications necessary to a good salesman. He emphasized the advantage of knowing materials and workmanship, stating that technical training should qualify one to determine quality. Unerring and quick decisions, attributes of the successful executive, are developed in the training of the engineer, he said.

The Electric Club of Seattle on Aug. 22 held a banquet at the Hotel Gowman, at which Norwood Brockett of the Puget Sound Light & Power Company was toastmaster. The list of speakers included: J. D. Ross, city light superintendent; R. J. Gille, Puget Sound Power & Light Company; Lloyd Spencer, Seattle Star; Harry J. Martin, National Carbon Company; J. J. Agutter, J. J. Agutter Company; W. M. Meacham of Meacham & Babcock; W. E. Jones of the Economy Fuse Company and president of the club. The banquet was part of the preliminary ceremonies in connection with the opening of the club's electric home and exposition on Aug. 25.

Starting the new association year, the commercial committee of the Pacific Coast Electrical Association will hold its first meeting at Fresno, Calif., Oct. 19 and 20, according to tentative arrangements. A. E. Holloway of the San Diego Consolidated Gas & Electric Company is chairman of the committee.



The California State Association of Electrical Contractors and Dealers en route to Sacramento. When this live wire bunch charters a steamer and goes on a trip it DOES things as may be judged from the action portrayed here. The trip forms an unusual combination of business and pleasure and should be taken by every contractor-dealer who can possibly get away. Special rates, special eats, special fun! The call is out for everybody to get aboard.

Manufacturer, Dealer and Jobber Activities

The Stewart Electric Company, Seattle, Wash., has moved from 912 Post Street to 206 First Avenue, to a larger and better equipped building.

The Vaughn Electric Company, formerly at 812½ Pike Street, Seattle, Wash., has leased quarters at 2131 Third Avenue, where it has moved its office and warehouse. In addition to general electrical construction work, the company has added an engineering office for preparing light and power wiring plans for architects and owners. The company recently opened a retail store at 4240 University Way, where a complete line of electrical appliances is carried, and lighting fixtures are manufactured.

R. D. Thomas has been appointed district representative for the Rocky Mountain territory of the National X-Ray Reflector Company of Chicago. Mr. Thomas will also represent the Federal Electric Company, with which concern he has for some time been connected in various capacities, and will at the same time handle the business of the George Richards Company.

Benjamin Littlefield, of the floor sales department of the Denver Gas & Electric Light Company, was presented with a check for twenty dollars on account of having arranged the window decoration which was entered in the Landers Frary & Clark Universal Iron contest. Mr. Littlefield, who was formerly a branch manager of the Edison Electric Illuminating Company, of Boston, presented such an attractive display that his company was awarded one of the prizes offered by the manufacturer.

The F. W. Wakefield Company, Vermillion, Ohio, has just brought out a new type of fixture chain which is said to have unusual characteristics. It is made of No. 5 gage solid brass and the joints are off center, thus overcoming the tendency of links to wedge open when subjected to strain. The new chain is called "Absotite," is said to have approximately twice the normal strength of chain of similar gage and will be supplied on all commercial lighting hangers supplied by this company in the future.

The Cutler-Hammer Manufacturing Company has recently brought out a new electric water heater for circulating systems. It is made in sizes from 750 watts to 3,500 watts, equipped with snap switch. Full information can be obtained from their circular No. 3067.

The Reynolds Electric Company, Chicago, has published a circular on RECO flashers for electric signs, displays and traffic signals. The circular, which contains wiring diagrams and other data, will be sent on request.

The Liberty Guage & Instrument Company, Cleveland, Ohio, has just brought out a very attractive counter and window display for use with its products. The display has considerable attention-getting value and should prove of assistance in connection with the sale of Liberty hot plates.

Condit Electrical Manufacturing Company has issued its bulletin No. 445-2 covering the subject of oil circuit breakers. This bulletin will be of interest to engineers and central station plant men.

Pierson & Boren have opened a new electrical supply store at 529 S. Pacific Ave., San Pedro, Calif., where they will do a general retail and contracting business.

The Harbor Electrical Company, Wilmington, Calif., has recently moved into new and larger quarters at 404 N. Canal Street, that city. **Frank McGinley,** the proprietor, is one of the successful contractor-dealers of the southern section and is an active worker in association circles of the Los Angeles Harbor district.

The C. & B. Electric Shops, Los Angeles, has just been incorporated with **C. P. Broughton** as president, **W. P. Lohman,** vice-president and **D. M. Corcoran,** secretary-treasurer. The company does a general supply and contracting business and has just moved to larger quarters at 2353-2355 West Washington Street.

The Westinghouse Electric & Manufacturing Company has just brought out a new publication called "Counter Points" which is intended to be of material assistance to electrical merchandise dealers. The magazine contains many live points and is exceptionally attractive in its appearance. It should prove of constructive interest to every member of a sales organization.

The Hart & Hageman Manufacturing Company, Hartford, Conn., has recently acquired the entire capital stock of the H. T. Paiste Company, Philadelphia, Pa., and in the future the two companies will be operated as one. Mr. Paiste will continue active in the new company.

Clapp & Lamoree, Los Angeles, Calif., have just been appointed California agents for the Clifton Manufacturing Company, Boston, Mass. They will handle the tape and splicing compounds only, as Keeler, White & Company, San Francisco, will continue to represent the factory on conduit.

The Automatic Electric Heater Company, Warren, Pa., has recently brought out a new control for its Sepco electric water heaters which permits of time control as well as full automatic control. The device is known as the "Timeter" and face plates are furnished in either nickel or brushed brass, with a jeweled pilot light and toggle switch.

The Elwell-Parker Electric Company, Cleveland, Ohio, has issued very interesting photographs and descriptive matter on its electric industrial trucks for use of millwrights and electric maintenance departments, and also of its electric chisel trucks for picking up objects close to the floor, such as bundles of metal, etc.

The McPhilben Lighting Fixture Company, New York, has just issued an attractive catalog of additions to its fixture line. The catalog may be obtained by addressing the manufacturer.

Landers, Frary & Clark, New Britain, Conn., have recently brought out a new domestic electric toaster known as the Universal Oven Toaster. The toaster is an innovation in style and claims are made as to several advantages over the former types.

The Indiana Rubber & Insulated Wire Company has announced that the George A. Gray Company, San Francisco, has been appointed Pacific Coast sales agent for that company's products. Mr. Gray is now in the East and will visit the factory before his return to San Francisco.

Portus Baxter, Jr., has joined the western sales force of the National X-Ray Reflector Company with headquarters at Los Angeles. Mr. Baxter will confine his efforts at present to the southern territory under the direction of F. S. Mills, western district manager for the company.

The Western Transformer Company has moved to new and larger quarters at 618 East 11th Street, Oakland, Calif.

The Robbins & Myers Company, Springfield, Ohio, has recently brought out a new line of constant speed, induction typ polyphase motors known as "Type L."

The electrical contractors of Los Angeles were nearly all in attendance when the Ruth Alexander sailed from Los Angeles Harbor on Aug. 24. Judging from the expressions on the faces of the men grouped for this picture, everybody on the trip had a good time. Reading from left to right the men are: Paul D. Howse, president Electrical Products Corporation; Glen E. Arbogast, president Newbery Electric Corporation; H. H. (Harry) Walker, electrical contractor and president of the Electrical Contractors and Dealers' Association of Los Angeles; J. F. (Jess) Zweiner, president J. F. Zweiner Electric Company of San Diego; A. P. Richards, F. E. Elser Electric Company; J. L. Mullenback, salesman Safety Electric Products Company.

Personals

C. E. Heise, San Francisco district manager, Westinghouse Electric & Manufacturing Company, has been elected the manufacturer member from San Francisco of the Advisory Committee

C. E. HEISE

of the California Electrical Cooperative Campaign to succeed K. E. Van Kuran. Mr. Heise is a native of California, having been born in San Francisco, and was graduated from the University of California in 1898. Shortly after graduation, Mr. Heise was employed by the San Francisco office of Westinghouse Electric & Manufacturing Company and for several years was engaged in installing motors, generators, and other electrical apparatus. After some years of field experience, Mr. Heise was sent to the East Pittsburgh Works of the Westinghouse Electric & Manufacturing Company for a course of training, after which he returned to San Francisco and continued in engineering work for a number of years, later being transferred to commercial work with the San Francisco organization of the company. In 1912, Mr. Heise was appointed San Francisco district manager, since which time he has continuously been in charge of his company's activities in this territory. Mr. Heise was one of the original organizers of the San Francisco Electrical Development League, and is a past president of that organization. Aside from the great interest Mr. Heise has always taken in the electrical industry, in which he is a leading figure, he is also a prominent member of the Bohemian Club, Olympic Club, Engineers' Club and Transportation Club. He has been a potent factor in the development of California and the West, and was largely influential in bringing to northern California the new factory of the Westinghouse High Voltage Company at Emeryville. Mr. Heise is a veteran employee of the Westinghouse Electric & Manufacturing Company, where he has served for over twenty-five years.

R. E. Wenk, former designing electrical draftsman with the Pacific Gas & Electric Company, is now sales engineer with the Puget Sound Power & Light Company, Seattle.

E. N. Brown, formerly president and general manager of the Majestic Electric Development Company of San Francisco, has recently entered the real estate and investment business in that city. Mr. Brown is maintaining offices in the First National Bank Building.

A. L. Miltenberger has been appointed district manager for the Wagner Motor Corporation with headquarters in San Francisco, to succeed **A. J. Myers.**

Clare N. Stannard, vice-president and general manager of the Denver Gas & Electric Light Company, with his family is touring Yellowstone Park by automobile. The trip will require about a month.

O. G. Thorpe, manager, Listenwalter & Gough, Los Angeles, and **James Addis,** sales manager of the same firm, have just completed a trip of several weeks to eastern factories. They report unusual activity among all branches of the industry. Manufacturers are well supplied with orders and price indications are firm with possible advances in some lines. Mr. Thorpe and Mr. Addis stopped in San Francisco on their return to visit their recently opened offices there.

E. M. Sweeley, president of the public utilies commission of Idaho, has resigned. Mr. Sweeley was appointed to the commission in 1919, and his term would have expired Jan. 1, 1925. **Fred C. Graves,** of Flier, Twin Falls County, has been appointed to succeed Mr. Sweeley.

David C. Pence, manager of the lamp department, Illinois Electric Company, has just returned from a six weeks' trip spent visiting the various lamp and lighting fixture manufacturers in the East.

C. P. Soderberg, formerly connected with the sales organization of the Westinghouse Electric & Manufacturing Company, is now in the sales organization of the Illinois Electric Company, handling the central station and corporation trade.

E. M. Harvey, sales manager, Woodill & Hulse Electric Company, has just recently returned from an extensive trip in the East where he visited the various factories which his organization represents in the Los Angeles territory, principal among them being the factory of the Eureka Vacuum Cleaner Company.

Fred Fair, prominent geologist and irrigation engineer of Boulder, Colo., has been appointed to the executive staff of the Lakeside Construction Company which is now building the new $12,000,000 steam generating plant for the Public Service Company of Colorado, at Valmont, close to Boulder.

C. Gleason Scott, a member of the firm of Scott Brothers Electric Company, is a charter member of the new Cooperative Club, organized in Denver. The club is similar to the other business luncheon clubs and is rapidly extending its organization to the Pacific Coast. Mr. Scott represents the electrical contractors and dealers of the city in the new organization.

Harry L. Harper, manager of Western Electric Company, Los Angeles, recently returned from a well earned vacation spent on the island of Catalina.

Ralf R. Woolley, hydraulic engineer of the United States Geological Survey, has returned from Uintah basin, where he went to gather information regarding water power sites. **H. F. Kilmer,** assistant topographic engineer of the United States Geological Survey, went with Mr. Woolley for the purpose of making a topographical survey of the country. Data gathered on the trip will be used by Mr. Woolley in classifying the land for entry.

L. P. Doyle, of the industrial sales department of the San Francisco office of the Westinghouse Electric & Manufacturing Company, is the first successful competitor in that office to receive one of the war memorial scholarships offered by that company to its employees. Four such scholarships are awarded every year on the basis of a competitive examination. Each carries with it the payment of $500 annually to be applied toward an engineering education in any higher institution of learning that the candidate may choose. The scholarship runs for four years.

O. L. Mackell, recently elected to head the Electrical Cooperative League in Denver, is a central station man whose position as chief clerk and office manager of the Denver Gas & Electric Light Company does not identify him directly with either the commercial or operating departments proper of the company. However, during the ten years he has been connected with the electrical industry of Denver he has always been found active in the affairs of the N.E.L.A., the Denver Civic and Commercial Association, and other business groups. Since the organization of the Electrical Cooperative League in that city he has been a member of the Advisory Board and served last year as treasurer of the organization. His election as chairman of the organization became effective with the new fiscal year starting July 1. He is a native

O. L. MACKELL

of Johnstown, Pa., and until 1913 was associated with the American Bridge Company as the Pittsburgh representative of the company at the Carnegie Steel Company. He was formerly head bookkeeper and in charge of the collection department of the Denver power company until he received the appointment to his present position in June, 1921. He is a director of the Doherty Men's Fraternity and also of the Victory Highway Association.

H. H. Courtright, manager, Valley Electrical Supply Company, Fresno, Calif., has recently been in San Francisco to attend the executive committee meeting of the California Electrical Co-operative Campaign.

E. B. McKinley, for several years proprietor of the Paso Robles (Calif.) Electric Shop, has sold his business to **Sidney Bretherton**, formerly proprietor of the Atascadero Electric Shop.

J. C. Naylor, 184 Tenth Street, Portland, Ore., who has for some time been western manager for the Eden Washing Machine Company, will now act as distributor in Oregon, Washington, Idaho and Montana for the Eden washing machine and other electrical labor saving devices.

Roy Worth, newly appointed assistant manager, Pacific States Electric Company, San Francisco, Calif., was born in Iowa. He graduated from Simpson College and some time thereafter moved to Seattle, joining, in 1908, the sales force of the Seattle Electric Company—which later became the Puget Sound Light & Power Company. A little later Mr. Worth became connected with the sales force of Holabird Electric Company and has since been in the electrical supply jobbing business almost continuously, occupying among others, the important positions of district manager, Northern Electric Company, Vancouver, B. C., and assistant to the general sales manager of the American Eveready Company. In 1914 Mr. Worth joined the sales force of the Pacific States Electric Company at Seattle and since that time has served that company, holding the following positions: assistant treasurer, assistant district manager at Seattle, and for the past three and a half years district manager of the Seattle branch. He has taken an active part in the affairs of the electrical industry in the Northwest and has been one of its conspicuous figures. Among other constructive movements

ROY WORTH

Mr. Worth was instrumental in the formation of the Seattle Electric Club and has been a leader in its activities. He has also assisted very materially in the organization and display of all electric homes held by the Seattle Electric Club and has devoted a large part of his time to constructive work and thinking for the entire industry in the Northwest. Mr. Worth takes up his new work with a wealth of experience and ability and a wide circle of friends in the trade.

Walter T. Wells has resigned his position with the Mountain States Machinery Company of Denver to become sales manager of the King Manufacturing Company, with headquarters in Chicago. Mr. Wells was considered one of the foremost street lighting experts in the Rocky Mountain region and his new position will provide a much larger territory for activities along the same line.

L. A. Robinson, western sales manager, Meadows Manufacturing Company, Bloomington, Ill., with headquarters at 854 South Hill Street, Los Angeles, was a recent visitor to San Francisco. He plans to make a business trip through the Northwest, returning to San Francisco in about a week, at which time he will meet **H. L. Barker**, general manager of the Meadows Manufacturing Company, who is making a business trip to the Pacific Coast.

Frank A. Short, former electrical engineer of the State Accident Commission, is now connected with the Safety Electric Products Company of Los Angeles as a consulting and advisory engineer.

Tracey E. Bibbins, president, and **D. E. Harris**, vice-president and general sales manager of the Pacific States Electric Company, were recent visitors to Seattle, where they inspected the Seattle branch and installed August Lutz as manager of the Seattle district, to replace Roy Worth, who has been advanced to the position of assistant manager. Mr. Bibbins was accompanied by Mrs. Bibbins and daughter, and Mrs. Harris completed the party.

H. F. Flagg, chief engineer of the State Board of Public Works at Olympia, Wash., has been selected by appraisal engineers of the city of Yakima and the Pacific Power & Light Company to arbitrate reports of the other two engineers in fixing the valuation of the company's water system which the city contemplates purchasing.

R. M. Richardson, sales manager of the Lettak Fire-Brick Arch Company, is a recent visitor to the Pacific Coast and during his trip appointed **Oliver B. Lyman** as San Francisco representative.

A. B. West, president of the Southern Sierras Power Company; **K. E. Van Kuran**, Los Angeles district manager, Westinghouse Electric & Manufacturing Company; **Girard B. Rosenblatt**, Pacific Coast manager, metal and mines department, Westinghouse Electric & Manufacturing Company, were among those members of the electrical fraternity who journeyed to San Diego to witness the total eclipse of the sun on Sept. 10.

Claude D. Allen, formerly New York representative of the Garlock Packing Company, has taken over the management of the company's business on the Pacific Coast with headquarters at San Francisco. Before coming to New York, Mr. Allen was in charge of the Boston office.

Richard E. Smith, advertising agent of the Southern California Edison Company and president of the Los Angeles Electric Club, together with **Charles H. Peirson**, director of publicity of the Southern California Edison Company, recently conducted a party of several hundred newspaper men of Los Angeles and southern California over the Southern California Edison Company's holdings in the Big Creek region.

Prof. Royal D. Sloan, who has served as assistant professor of electrical engineering at Yale University during the past year, has recently been appointed associate professor of electrical engineering at the State College of Washington, at Pullman. Professor Sloan is well known in engineering circles in the Northwest, having grown up in the state of Montana. He was graduated in electrical engineering at the University of Montana in 1913 and was employed for two years on test work with the General Electric Company. Returning to Montana he was engaged on the Thompson Falls development of the Montana Power Company, later becoming assistant professor of electrical engineering at the Montana State College, Bozeman. At the outbreak of the war Professor Sloan entered the navy and was assigned to the battleship New Mexico where he had charge of the electrical equipment of the first electrically driven battleship, serving under Commander Evans, son of "Fighting Bob Evans." After the war Professor Sloan returned to Bozeman and was associate professor of electrical engineering for several years. He will arrive in Pullman early in September to take up his new work.

PROF. ROYAL D. SLOAN

John Stone Stone has been presented with a medal by the Institute of Radio Engineers in recognition of his conspicuous and distinguished service to the radio industry. This medal is given each year to the individual who has contributed the most to the advance of radio communication.

Obituary

Frank G. Drum, formerly president of the Pacific Gas & Electric Company, died very suddenly on Aug. 28 at his apartments in San Francisco. Mr. Drum was one of the pioneers of hydroelectric development in California and had for years been prominently connected with the industry. From 1907 to 1920 he was president of the Pacific Gas & Electric Company and was succeeded, on his voluntary resignation, by W. E. Creed. He was also prominent in the financial world and was actively connected with several oil and railroad companies.

Trade Outlook

San Francisco

The summer lull is gradually being dispersed and trade conditions are improving. Labor conditions are not yet satisfactory, particularly in the building trades. New construction continues at a marked rate and some materials show price advances. Retail buying is increasing and the electrical trade is participating in the benefits of increased volume of trade.

Electric range and domestic heating equipment business continues to increase notably and is a feature of the general market. Supply business continues to increase, being affected by the steady volume of building, which continues without interruption.

The entire electrical industry is interested in the Japanese catastrophe and responded freely to the appeal for relief.

Collections continue good and the entire tone of the electrical business is extremely optimistic.

Los Angeles

All building records in the history of Los Angeles for a month were broken during August, when permits totaled $22,249,262, bringing the year's total to $131,221,720.

There was a noticeable falling off in the bank clearings as indicated in a statement just released by the Los Angeles clearing-house, the totals for August showing a decrease from July of $195,072,221. The decline from the record total of July is accredited principally to seasonal causes and the fact that business as reflected through bank clearings, has reacted only partially to the customary summer dullness is taken as a favorable forecast for fall business and industrial operations of some magnitude.

The sale of electrical merchandise has slumped a little during the summer months, and this has enabled manufacturers to catch up on some lines of stock which for many months have been badly depleted. On the whole business has kept up at a very fair pace although sales have slackened due to the decrease in purchasing by the larger oil companies.

Electrical retail business has likewise occasioned a slight falling off in the amount of sales, but this is only to be expected at this season. The sale of radio sets and supplies has been beyond expectations all summer.

Portland

During August this year the general business conditions existing in Portland and vicinity were better than in July and during August of a year ago. Bank clearings in Portland for August of this year show a gain of 17 per cent over the same month for 1922. Portland receipts showed a gain of over 19 per cent for the same period, while exports from Portland to foreign ports for August of this year show a gain of approximately 50 per cent.

In the lumber industry the conditions remain about the same. Production is holding up well although there are some rumors of certain mills cutting down to a one-shift basis. Mills continue to produce far above normal and orders continue to absorb the output. Prices are said to have reached bottom.

Residence construction continues in all parts of the city with an apparent speeding up to take advantage of favorable weather. Building permits for August showed a good gain over last year, making the totals for the two years to date about equal.

Crop conditions in Oregon are excellent and producers will receive a considerably greater total amount for their products than in 1922. The Columbia River salmon pack has been estimated at over $6,000,000, wholesale prices, which is slightly higher than a year ago. The fish are of fine quality and the market favorable.

There is considerable conjecture about the possible effect of the Japanese catastrophe on Portland's trade. The best opinion seems to be that it will cause a cessation of shipments for a time, perhaps, with an increase of business eventually.

Seattle

The beautiful electric home and exposition under auspices of the Seattle Electric Club has stimulated interest in electrical devices. Washers, vacuum cleaners and lamp socket appliances have been moving well and prospects for the fall season are excellent.

New building is proceeding steadily and it is expected that the total of building construction values will reach $25,000,000 for the year, thereby setting a record. Lumber exports for the first seven months of the year show that the total cargo shipments from Washington ports exceeded one billion and a half board feet, an increase over a corresponding period of last year of nearly half a billion feet. The outlook for lumber business this fall is excellent, with production at high level, to replenish greatly reduced stocks throughout the Northwest.

Flour shipments to the Orient gained substantially during the past seven months. Increased activity in wholesale and retail trade of Seattle is noted with the beginning of the fall season, many lines already showing a decided quickening. Clearance sales by department and specialty stores held prior to the opening of the fall business have made good returns.

Spokane

General conditions remain about the same and all comments are optimistic. The output of many of the local woodworking establishments was curtailed during August and the Sperry flour mill doubled its output of flour. The good weather has been extremely favorable for harvesting and a normal movement of wheat is anticipated as soon as the threshing season is over.

It is reported that a record shipment of fruit will be made from the Inland Empire. An indication of this is found in Walla Walla's prune crop of 1,200 to 1,250 carloads. The previous record was 792 cars in 1921. The present crop will bring from $30 to $35 per ton in eastern markets.

August mining activity improved slightly over July, with a sharp drop in Coeur d'Alene lead production because of the recent fire at the Hecla properties. The Sumpter smelter, in eastern Oregon, is preparing to operate and began buying ore, stimulating activity in that district. Otherwise new operations of magnitude are lacking, with metal markets unfavorable under the present costs of production.

A car repair shop is to be built at Hillyard, just north of Spokane, and will provide employment for 300 men. It is intended eventually to increase the size of this plant and to build there all fruit cars needed for northern railroads.

Salt Lake City

The approach of the fall season gives promise of an unusually busy period in industrial lines. Building activity will also continue unabated during the fall weather.

Crops of every kind are better this year than they have been since 1918, and the farmers apparently will receive better prices than for the past two or three years.

In response to a definite demand for homes, building activities in Salt Lake City for the month of August showed a healthy increase over the preceding month and the same month last year. It is predicted that before building operations are halted at the end of the season there will have been 1,500 new homes added this year to Salt Lake's housing facilities.

From many sources come increased demands for electric service. Electrical jobbers in this territory also continue to report a considerably greater volume of business than for last year.

Retail business in general is fair, with collections showing a marked improvement.

Denver

Conservatism still pervades trade circles in the mountain region. Business in most lines is good but the atmosphere can hardly be said to be optimistic although building operations, bank clearings, labor conditions, and other primary factors are generally satisfactory.

Construction permits dropped off in August, permits totaling a decrease of $631,000 over the same month of 1922. The total, however, for the first eight months of the year is two million dollars greater than for the same period last year.

Due to these financial difficulties and the summer season depression, buying has been slow. This is reflected in the movement of electric appliances, although washing machines and vacuum cleaners have been up to the average. Frequent campaigns on electric ranges throughout the state are getting results. Because of price uncertainties, supply of conduit is running at low ebb. Line material business is reported fair and commercial lighting units are moving freely.